SMARTFIT: AUGMENTED REALITYINTEGRATED FOOTWEAR RETAIL AND CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

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Bachelor of Science in Information Technology
with Specialization in Network and Web Application

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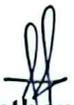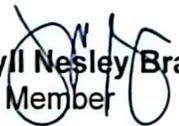Ochea, Leander P.

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APPROVAL SHEET

In partial fulfillment of the requirements for the degree Bachelor of Science in Information Technology with specialization in Network and Web Application, this capstone entitled, **SMARTFIT: Augmented Reality-Integrated Fo 'wear Retail and Customization Portal With AI-Powered Assistance**, has been prepared and submitted by **Veeny Ree Mae R. Bautista, Leander P. Ochea, Marc Steeven B. Parubrub**, and **Armabel N. Ramos** who are recommended for oral examination.

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Dedication

This capstone project would not be possible without the love, encouragement, sacrifices, support and motivation from my family to help me complete this project. I would like to express my gratitude to our advisor, Ms, Cherry A. Collera, for her valuable assistance, patience and insight in helping us achieve the success of our capstone project and in my personal growth as a student. To my team members, I would like to extend my appreciation to Marc Steeven Parubrub for all the late nights and paience you had while working with the system; Armabel Ramos for being my dependable friend and for your consistency, support and determination in the completion for our documentation; and to Leander Ochea, for your industry and tenacity in creating a reliable and stable work product. This achievement could not have occurred without the effort, dedication, commitment and perseverance of both our individual efforts and our team effort.

- **Veeny Ree Mae R. Bautista**

BSIT - NW4B

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efforts we shared, and our collective perseverance allowed us to complete this project successfully.

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- Armabel N. Ramos

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I am dedicating this Capstone Project to all those people who have been supporting my professional development through their commitment, support and mentorship. I also want to sincerely thank our Thesis Adviser for providing us with a lot of valuable time and knowledge that helped us develop our successful project. I would like to thank my fellow team members as well, first and foremost is Marc Steeven Parubrub because he was the one leading and managing the overall direction of our project, in addition to being in charge of both the front end of creating the website and the Augmented Reality (AR) portion. Finally, I appreciate Veeny Ree Mae Bautista and Armabel Ramos for the devotion, hard work and unselfishness of each of them toward the completion of our documents. This project represents both our journey throughout school, and the result of teamwork and the determination we have in pursuing a common goal. I hope this serves as a stepping stone toward many future opportunities and as a source of inspiration to continually pursue greatness.

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- Leander Ochea

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I dedicate the success of this Capstone Project to my family because of their love and support that has no limits. I would like to thank you Mother, Jenny Ann Birung for motivating me with your sacrifice so that I can reach my goals. I would like to thank you my girlfriend, Veeny Ree Mae R. Bautista for being my rock and my pillar of strength during all of the battles we fought together. My Team's spirit of collaboration and my Team's continued support allowed us to achieve this project. Thank you to Veeny Ree Mae R. Bautista, Armabel N. Ramos, and Leander P. Ochea, your teamwork is impressive, and we are grateful for your contributions to this project's success. Thank you to our adviser for her guidance and insight that was essential in achieving a successful project. Thank you as well to all of our classmates and friends for their input and support in helping us to complete this project. The success of this project demonstrates how much we can accomplish when we have a common vision and work together to help each other succeed.

- **Marc Steeven B. Parubrub**

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Acknowledgments

Abstract

The Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance is a web-based system developed to enhance the online shoe shopping experience by making virtual shoe trials and customization of footwear designs available to the users based on their preferences. The developed system has been created to digitalize the footwear retail process while featuring an interactive and personalized experience for users. Customers can have access via registration and log-in to enter the system and search for available footwear, augmented reality (AR) to virtually try shoes on, and customize their favorite designs. The developed system also comes with an AI-powered assistant that can respond to user queries, help them to navigate through the platform, and help them to make well-informed decisions. A system administrator ensures the validation of user accounts, chatbot management, offensive language control, and customization orders. The developed system requires a stable internet connection as well as a compatible web browser for optimal performance. The Modified Agile Methodology was widely implemented by the proponents in system development, where iterative flexibility, adaptability, and efficiency in accomplishing tasks without consuming too much time are a priority. The system was assessed on usability, performance efficiency, and reliability and followed ISO 25010 standards: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. A web-based system that was developed ended up scoring a 4.64 – labeled "Excellent" – proving how well it works when it comes to delivering a solid, user-friendly online tool for buying and customizing shoes.

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Chapter 1

INTRODUCTION

Background of the Study

The way that people shop in today's digital world has been impacted by how they use technology to find products to buy and make a purchase decision. Augmented Reality (AR) is among the biggest technological advancements, and it combines digital data with the user's real-world surroundings; as such, it has created new ways to enhance the customer experience in many different business markets. The retail market has experienced major changes in consumer shopping behaviors through the implementation of AR applications, enabling consumers to view products before physically going to a retail store. AR enabled shoe applications give consumers an opportunity to view shoes as three-dimensional models or try on digital versions of shoes so consumers can see what each model looks like along with trying on the correct size from anywhere in the world. These types of applications provide consumers with more convenience while shopping online, help consumers make better informed purchasing decisions and build an online shopping store that grabs the attention of the customers. As AR continues to evolve and grow, SmartFit continued to bridge the gap between consumers shopping online and consumers who prefer to shop in stores by providing consumers with an easy-to-use application to assist with selecting footwear when shopping online or in-store at any time.

Some big brands – Nike among them used Augmented Reality to improve how people shop and streamline their workflows. Nike's AR tools let customers test shoes digitally, helping them pick the right size before buying (Patov, 2024). That setup cuts down on returns, keeps buyes happier, plus drives up e-commerce revenue. Smarftfit takes it further by doing more than just providing a virtual try-on experience but also assisting businesses in managing stock levels, tracking transactions, optimizing retail operations, and distinguishing between online and physical store inventory. By integrating AR into both the customer experience and internal business processes, SmartFit helps companies improve efficiency, reduce costs, and enhance overall management.

The developed system is a user-friendly platform intended to enhance online shopping of shoes. Users can try shoes on virtually through augmented reality in the platform. Unlike other apps, such as Nike Fit, which only concentrates on sizing. The developed system has a customization feature that allows the users to design their own footwear by choosing basic colors, materials, and styles depending on their personal preference. It also supports products of different shoe shops, offering a broad variety of options instead of single branders.

The main problem of the study was to develop and implement a web-based system that managed shoe business operations and enhanced the customer shoe-fitting experience through a technology. The study sought answers to how users could register on the platform; how shop owners and employees maintained the stock of shoes in the online catalog; how customers were able to try on shoes using AR feature; how the system handled customization options for shoes and

provided cost estimates; how the customers placed their orders; how the customers tracked the status of their orders; how AI-powered customer support assisted customers with their inquiries; how the feedback and ratings were collected and managed; how was report generation implemented within the system.

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal is a web-based system that enhances the AR shopping experience while also managing transactions and inventory. It allows customers to try on shoes virtually and explore various styles while helping to manage stock and track sales more efficiently.

The goal of this project is to simplify shoe retail by managing orders, tracking inventory, helping employees, and improving customer experience.

Objectives of the Study

The main objective of the study was to develop and implement an Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance, which aims to manage footwear shops and enable customers to virtually fit and customize shoes through AR model viewing and an AI chatbot.

Specifically, the study aims to:

- Design a portal that is capable of:
    a. Allowing all users to register through the registration module;

b. Providing shop owners and add employees with an inventory management module to update stock levels and manage the product catalog through inventory module;

c. Enabling customers to access the augmented reality website that lets them try on the shoes virtually;

d. Offering a basic customization option for shoes that allows customers to personalize their selections and receive cost estimates through the customization module;

e. Facilitating customers to place shoe orders easily through the ordering module;

f. Implementing a tracking system that allows customers to monitor the status of their shoe orders in real time;

g. Integrating AI-powered customer support to assist customers with their inquiries;

h. Establishing a feedback system where users can submit ratings and reviews; and

i. Creating a report generation to collect data from the system for easy report creation.

- Create a system using Java EE (Jakarta EE), DeepAR, Firebase, an internet connection, and Windows OS (10 or 11) as software requirements and a desktop computer, laptop, printer, router, and a mobile device as a hardware requirements.

- Test and improve the system in terms of functional suitability, usability, maintainability, and security.

- Evaluate the performance of the system based on ISO 25010 characteristics such as functional suitability, maintainability, usability, performance efficiency, compatibility, reliability, security, and portability.

Scope and Limitations of the Study

The developed SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance enhances the online footwear retail process by providing a web-based system that integrates augmented reality and artificial intelligence create a hands-on, smooth way to shop, allowing customers to browse shoe models and customize them, track orders, and receive AI-driven customer support, and ensuring that shop owners and employees can efficiently manage inventory, process orders, and update product availability.

With the developed system, users were able to use a registration form to sign up and create an account. It allowed shop owners and employees to effectively manage the inventory of footwear, process orders and update the availability of the product. Employees, duly authorized, could track transactions, monitor levels of stock and supervise requests for customization and, therefore, improve the experience of retailing flow and effectively.

Also, in conjunction with the use of augmented reality, the registered customers were able to experience the shoes in a virtual manner and visualize

them before taking a decision as to their purchase, enabling them to see the basic styles, colors and designs in real time.

Through the ordering system, consumers were enabled to place orders of the footwear through an interface which permits an uncomplicated buying process. Shop owners and employees managed orders, modification of the availability of products and the processing of transactions.

The customization service engaged customers by allowing them to choose the designs, colors, and types of materials for their shoes, while they received estimates of price. The shop owners and the employees handled requests for customization, assuring themselves that they were possible; they handled custom orders with dispatch.

By means of the order-tracking system the customers kept track of their purchases in real time. The shop owners and employees entered order statuses and kept the customers informed as to the progress of their purchases.

The use of AI in customer support helped customers receive a quick answer to their inquiry. The feedback system also provided an opportunity for customers to rate and review products so that shop owners/employees could gain insight into product performance and overall customer satisfaction. Finally, the program was able to provide reports on sales, inventory and customer feedback which would allow shop owners and employees to analyze the data they collected.

The web-based system ensured that only the shop owner and authorized employees can access the records within the system. For inventory, stock updates

were based on the input of authorized employees only. The augmented reality feature allowed customers to visualize shoes but did not provide an exact fit measurement. AI-powered customer support assisted with basic inquiries but did not replace human customer service for complex concerns. The shoe customization options were available based on predefined models, and fully custom designs were not supported. The user was required to have a compatible mobile device. The system did not manage payment transactions.

The proponents have used the required software suitable for the system. The developed system used Java EE (Jakarta EE) for backend development, DeepAR for augmented reality features, and Windows 10 or 11 as its operating system. Also, Firebase is used as the database in order for the developed system to work properly. At the same time, a computer system such as a desktop or laptop with the required software and a working browser should also be provided.

The developed system is evaluated using ISO 25010, which includes eight core traits: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. The proponents interviewed one hundred (100) individuals as respondents. The target respondents consist of five (5) shoe retail shop owners, ten (10) employees, thirty (30) customers, and fifty-five (58) students, for a total of one hundred (103) respondents.

Significance of the Study

The study was a major initiative of improving shoe retail shops efficiency. This provided a structures way for billing and processing the orders, provided the employees assistance in ptocessing their work on a daily basis. It provides ease for the time taken in carrying out the transactions which reduces mistakes.

It also convenient for the customers as they can view the various products, customize the shoes and follow the order position in real time. This ensured a seamless shopping experience with greater control over their purchases.

Finally, the study benefited the shoe industry by introducing a technology-driven approach to retail management that helps business operations and improve customer satisfaction. It gives companies a competitive edge by adapting to modern consumer demands.

Chapter 2

CONCEPTUAL FRAMEWORK

This chapter provides information that supports the development of the study. The research refers to all gathered information from books, journals, and electronic sources, as well as findings from theses and dissertations, which provide a sufficient background for the study.

Review of Related Literature and Studies

Augmented Reality

Tan et al. (2022) stated that augmented reality (AR) is a technology that allows users to see how virtual things integrate into their real-world environment by superimposing them over real-time images of physical areas. To produce different perspectives of reality, augmented reality incorporates virtual elements into the real-world environment. Through the real-time blending of virtual and real elements, augmented reality enhances perceptions of both auditory and visual reality.

In other words, Fritz et al. (2022) clarified that Augmented Reality (AR) technology enables users to "see the real world with virtual objects superimposed on or combined with the real world," thus transforming their visual perception of the physical world in real-time. Consumers can engage with AR technology today on several platforms, but mobile devices like smartphones and tablets are by far the most widely used.

In addition, Çöl et al. (2023) explained that augmented reality enhances the natural world and offers a real-time perspective of the natural environment with digital information and perceptions.

Overall, augmented reality was used in the study to display footwear products and enable their immediate customization by users to optimize customer experiences during purchasing decisions.

Footwear Industry

According to Chituc (2022), the footwear industry requires high specialization of the operations for the realization of shoe collections, which requires high collaboration among important enterprises (e.g., shoemakers, suppliers, and companies).

Orgilés-Calpena et al. (2020) mentioned that the footwear industry used adhesives to combine various materials such as leather, rubber, and synthetic fabrics into durable products. The selection of the right adhesives is important to make sure a safe bond between these materials. It highlights that to achieve performance and quality standards in shoe manufacturing; the industry needs special adhesive formulas because of the complex materials used.

Jave-Chire et al. (2025) described the footwear industry is global in nature, that focuses on creating, designing, and selling shoes and other related products. It involves many participants, including raw material suppliers, manufacturers, designers, and retailers. They collaborate to meet the want of customers chasing fashion, comfort alongside eco-friendliness.

In short, teamwork among manufacturers and suppliers, especially among designers, letting the sector keep up with the needs for solid-quality goods; this approach guided the research to provide a uniform shoe style plus how they're sold.

Footwear Retail and Customization

The footwear industry was now increasingly looking at developing online platforms for customers to customize their own shoes as stated by Oliveira et al. (2020). As such, the researchers developed a survey tool to be completed by industry professionals with an intention of gaining insight into how designers collaborate on designing and creating custom shoe designs for customers using online platforms. The results support the continued development of user-friendly tools for customers to have the option of customizing shoe designs as well as the many options for the customer.

As per Firtikiadis et al. (2024), the market wanted footwear products which were not only personalized but also made of sustainable materials; therefore, companies were currently putting their focus on creating high-quality and comfortable products that meet both requirements.

Spahiu et al. (2021) pointed out how shoe companies apply to technology like artificial intelligence, augmented reality, or 3D scanning to boost custom product creation. Newer tech upgrades give customers to customize their footwear products, which enhances both user experience and production efficiency.

To summarize, the footwear industry has evolved through sustainable development, personalized features, and technology-driven personalization. In this sense, the study was conducted on this information to express tools that allow retailers to establish more effective links and offer better personalized shopping solutions for footwear.

Portal System

Bervell et al. (2024) defined a portal system as a digital platform that served as a central location for users to access services, information, and tools. Portal systems take place of many applications and databases, so users do not have to switch between applications as much when using the system to communicate, collaborate, or to gain to other services on the system.

Additionally, Zongda et al. (2021) explained that an e-commerce portal system privacy model can be created by generating many fake accounts, with the goal of separating user activity from trusted and untrested servers. The model also provides the user with anonymity through the generation of confusion within the tracking process of the system.

Nikiforova and McBride (2021) also pointed out that portal systems acts like a hub, pulling together various information streams along with service features so people can reach them fast. These setups improve experience by streamlining access paths while users grab content without hassle – all while creating smoother interactions over time.

In conclusion, the portal system setup from the study brought service together – also making navigation smoother while keeping tool access locked down safely.

AI-Powered Assistance

In the opinion of Baloska et al. (2022) chatbot used have changed the way businesses communicate with their clients in online shopping services and others. These chatbot's third generation interprets the human intentions through artificial intelligence and learning from conversations. They provide an appropriate response of the circumstances, putting a more humanface on contact.

Fonseka (2025) stated that artificial intelligence have produced tools likechatbots, creating information and communicating with users in real time. These chatbots function like human beings using machine learnings bycertain knowledge and given automatic responses.

Balakrishnan and Dwivedi (2021) investigated AI features that influence users' interactions with digital assistants. The research measured how customers perceive AI, resulting in their attitudes and purchasing behavior. A further study confirms that when the AI assistants seem human-like, they were able to enhance customer involvement and produce a better shopping experience, as well as assist decision-making in purchases.

Overall, the AI enabled chatbots assisted the greater customer communications which were established on the platform. The well-generated AI products attractive enhanced customer interactions and provided better Q&A's.

Augmented Reality Technology

Martínez et al. (2024) emphasized on how Augmented Reality (AR) can add a greater amount of enjoyment and gamification to physical education. The research states that through the addition of interactive digital components to real world content and experiences in physical activity, augmented reality increases student involvement and motivation for physical education experiences. The results uncover that augmented reality is an effective method of enhancing learning experiences within physical education.

Živičnjak et al. (2025) defined Augmented Reality (AR) as a system that applies data, including images, sounds or words, from the computer in the real world rather than type creating a simulated environment like Virtual Reality. AR uses computer generated aspects but adds that to what the subject is viewing in front of him or her instead of having a completely created environment. This type of technology is often used in conjunction with the use of a smart phone, tablet, or even eyeglasses designed specifically for augmented reality.

Meanwhile, Lin et al. (2024) defined Augmented reality as technology that combines virtual information with the real world, allowing users to view virtual objects through the projection of computer-generated images, sounds, vibrations and other signals into the real world. It uses a display device, such as a smartphone screen or a head-mounted display, to show virtual information over a real scene, blending it with the real world.

Overall, the developed system used basic footwear customization using AR in their real environment. Consequently, the experience of buying shoes becomes better personalized appreciation to its feature.

AI-Driven Chatbot in E-Commerce

Rahevar and Darji (2024) stated that AI-powered chatbots in e-commerce used what each customers likes to suggest products that are right for them. These chatbots help by talking to customers in real time, which makes people more interested in using the service, keeps them coming back, and helps the business sell more products.

In addition, Prasad et al. (2024) also noted that AI-driven chatbots are important tools because they make things run more smoothly. Virtual assistants based on artificial intelligence serve customers all day and night answering questions and give recommendations to help customers make purchases. E-commerce platforms rely on chatbots a lot due to their continuous learning which enhance their accuracy levels over time.

Furthermore, Shahzad et al. (2025) explained that an AI-driven chatbot in e-commerce is a computer program designed to have conversations with customers in a way that feels natural. These chatbots support e-commerce sites - handling queries, recommending items, or guiding through puchases that no human required.

The used of AI chatbot in online shopping assists customers by responding to queries while streamlining the buying process. This research explored how such advantages might apply specifically to those purchasing footwear.

Database Management System

As discussed by Mohammed et al. (2024), a database system was the set of practices and techniques for collecting data securely and accurately, and for its easy retrieval. It is essential for the effective management of data by business or other organization for it aids decision-making and operating efficiency. This process is primarily the organization of data usually through databases, spreadsheets, or data management systems permitting easy access and analysis of the data.

A Database Management System (DBMS), the mainstay in organizing and handling access to structure data (Katsarakis et al., 2024). Thus, it permits immediate search facilities and handling operations.

In addition, Silverio (2023) defined a database management system (DBMS) as a software system for definition and management of database. It was the glue that holds the end user in connection with the data in the database for the purpose of database end user, data can be created, read, changed, and delete from the database.

The role of the DBMS in this project was to help with creating, updating, querying, and organizing information about customers, shoes, shops, admins, and inventory. It offered a way to manage the administrative needs of each area – such

as customer data, shoe details, shop activities, and admin tasks while ensuring accurate and up-to-date inventory information.

Inventory and Order Management

According to Rosa & Wahju (2020), inventory and order management were used to allow businesses to be run at an operational level effectively, using inventory tracking to make errors occur less often, enhance overall performance, and provide the ability to do quick stock counts through the use of modern barcodes and RFID technology, as well as providing instant reporting capabilities that can be used for financial and sales management.

Yadav (2024) described the inventory and order management were important components of the supply chain that help companies improve their operational efficiency and product delivery times through better stock management. The automated order system with real-time tracking provides companies with the tools needed to streamline all aspects of their business.

Technologies have been transforming how businesses manage their inventory and orders, giving them faster methods for completing tasks. This is accomplished by replacing old processes with automated order fulfillment options, allowing companies to be more efficient in fast-paced environments (Mashayekhy et al., 2022).

The study utilized an inventory and order management system to assess how a company operates by monitoring and managing product flow from one stage of work to another.

ISO 25010

Mena and Santórum (2020), talked about how the ISO 25010 standard can be utilized to assess the quality of a program by developing characteristics such as maintainability and portability. ISO 25010 was employed to determine whether cross platform application development tools met this standard. The findings indicated that while long term cost savings are achieved through maintainability frameworks that employ component-based architecture and cross platform capability are reflective of these quality standards.

Similarly, Yuniasri et al. (2020) addressed ISO 25010, focusing on on its role in evaluating software quality through key traits – think function and ease of use. Despite that, they stress why this framework matters when building programs people can rely on while enjoying using them.

On top of that, Robbins (2023) described ISO 25010 as a worldwide benchmark for checking how good software is. It outlines eight core traits tied to product quality – functional suitability sits alongside performance efficiency, compatibility comes hand in hand with usability, reliability pairs up with security, maintainability, and portability.

To summarize, the proponents relied on ISO 25010 to assess whether their built system met quality standards by looking at functional suitability along with performance efficiency; meanwhile, compatibility, usability, reliability, security, maintainability, or portability were also weighed.

Wanna Kicks: AR Shoes Try-on

According to Ivanov et al. (2022), Wanna Kicks has a solution that provides viewers with augmented reality based on a 3D display of their products. With their smartphone's camera, users can see images of their sneakers in 3D in the dimensions required for the shoes.

Both systems incorporated augmented reality into their solutions to allow for the try-on of the shoe while increasing consumer engagement when shopping. The main distinction is that Wanna Kicks emphasizes developing an augmented reality-based try-on system for the user, while the main focus of SmartFit is the provision of features that enable businesses to integrate automated ordering and design solutions enhanced using AI.

Vyking AR

Murphy (2023) noted that Vyking developed an in-store solution using AR for smart mirrors that allow customers to see a virtual shoe fitting prior to purchasing; this system includes three dimensional shoe model display capabilities; staff are able to reduce their work load with this system and retailers have an extensive digital product catalog available to consumers in the physical stores. Additionally, customers who utilize Vyking AR can view digital advertisements as well as receive omnichannel marketing messages through digital displays located inside and outside of store windows.

Both technologies use AR to provide enhanced shopping experiences for retail consumers and improve business functions at retail locations. However, Vyking AR is distinct from other similar technologies because it only provides AR technology specifically for large retail companies to be used through physical displays and mirrors. The web-based AR try-on service of SmartFit allows customers to shop everywhere as the platform connects directly to local businesses through inventory tracking capabilities.

GOAT - Sneakers and Apparel

Zhang (2025) explained that the GOAT - Sneakers and Apparel system lets users try on sneakers digitally through their mobile application. Through realistic 3D visuals, customers can view the products before finalizing their buying decision on GOAT AR. The tool helps users make more educated purchasing choices, as a result of which they enjoy an improved shopping experience.

Both systems provided virtual try-on technology to improve purchasing experiences because customers can visualize their footwear choices prior to purchase. The difference is that GOAT AR functions as a worldwide resale network by concentrating on developing sneaker try-ons, while SmartFit targets footwear dealers through its feature set for real-time inventory tracking, with AI-powered customer features and performance tools for business optimization.

Software Requirements

In developing the system, the proponent used Java EE (Jakarta EE) for enterprise application development, DeepAR for creating AR features, Firebase for backend support, and an Internet connection was necessary for functionality, and the development was performed on a Windows OS (10 or 11).

Java EE (Jakarta EE)

Yalamanchili (2024) explained that Jakarta EE is a strong platform that is build upon Java SE. It gives developers APIs and runtime environments to make applications that can handle lots of users and work across different parts of a system. It simplifies handling jobs on multiple machines through automated transaction support, methods that let features grow without extra coding effort, while including pieces that work on their own.

The proponents have used Java EE to handle backend tasks, so the server manages most operations while linking up with the mobile interface.

DeepAR

According to DeepAR (2023), DeepAR is an application that helps generate augmented reality initiatives. It can transform 3D models into dynamic AR experiences via usage with web, iOS, and android applications. Another insert additive service is advanced foot-tracking, which allows individuals to try virtual shoes. With these characteristics in mind, the platform offers assured oppurtunities for the generation of interactive AR initiatives during the various sciences.

Overall, the proponents have used DeepAR studio as a set of development tools necessary for designing the developed systems which carry out AR functions through their utilization of the existing creative devices to establish immersive communication.

Firebase

Ariani et al. (2025) defined Firebase as a development platform from Google that provides a range of services that assist developers in creating high-quality applications more efficiently. Firebase is an excellent choice to facilitate Android-based application development due to its features, which comprise Firestore for real-time database storage, Authentication for user security, Cloud Functions for backend features, and Firebase Cloud Messaging (FCM) for notifications. Besides enhancing the development process, the combination of these services adds security and functionality to applications.

All in all, the proponents have used Firebase because it delivers scalable options that reduce the complexity of interactive user data management. Real-time user data storage and user management services are controlled through backend management features in the developed system.

Internet Connection

Bassumallick (2023) specified that the internet connection serves as a global center for computer networks. It is a network of connections that allows users at any workstation to receive data from any system and commonly interact with other users. The Internet is worldwide. A network is a collection of connected

computers, servers, phones, and smart appliances that communicate with one another via the Transmission Control Protocol (TCP) standard to support the speedy transfer of files, information, and services.

To summarize, the proponents have used an internet connection that enabled users to communicate effectively with one another. Moreover, all capabilities of the built system require an internet connection to function properly.

Windows OS (10 or 11)

Malallah et al. (2021) concluded that Windows is more dependable, compatible, and stable than other operating systems, including Linux, Mac, Android, and iOS. The most used platform for creating application programs is Windows. It is affordable and reliable, compatible, safe, and simple to use, in addition to offering users unique and competitive services and features.

The proponents have used Windows OS as the operating system for developing an application.

Hardware Requirements

The hardware requirements include a desktop computer, laptop, printer, router and a mobile device.

Desktop Computer

Sapta et al. (2024) discussed how desktop computers deliver multiple benefits that exceed portable devices through their greater power, along with specific functions and multiple replaceable elements. Gaming and video editing,

as well as software development, benefit the most from such devices due to their resource capacity. Professionals and personal users find desktop computers superior because they provide greater power, along with more customization options and upgrade potential than laptops do.

To conclude, the proponents have used desktop computers for developing and evaluating the system.

Laptop

Riantika et al. (2025) defined laptops as portable devices created to handle tasks, including data processing and programming, as well as online research. Laptops combine essential components, which include a processor along with RAM and storage, and a display, into a small design for mobile work environments. Users can perform academic projects along with professional work and personal tasks with the help of laptops that deliver applications and internet access, combined with multimedia functionality.

The proponents have utilized this in making the documentation.

Mobile Device

In reference to Viswanathan (2022), a mobile device is a general term for any portable or handheld computer, such as tablets, e-readers, smartphones, PDAs, portable music players, smartwatches, and fitness trackers with smart capabilities. All mobile devices can do many of the same things a desktop or laptop

computer can do. However, they provide different computing features and experiences.

Overall, mobile devices have served as the interface for users to access augmented reality (AR) system features.

Printer

According to Kotahi (2024), the printer is an output device for printing text or pictures onto paper. Printers are used on a daily basis to print documents, photos, and different things at home, in workplaces, schools, and businesses. It varies by technologies, functions, and sizes.

In other words, the printer was used by the proponents to have a hard copy of documents.

Router

Fisher (2021) stated that a router is a common piece of hardware for home networks that promotes communication between your local home network, such as your computer and other connected devices, and the internet. It is the first line of protection against network intrusion, allowing the router to have the highest level of security to protect your computer system and data from attacks. Furthermore, the router has software called firmware that should be updated as soon as the router manufacturer releases it.

Overall, the router functioned as an internet connection interface that allows real-time data exchange and supports all backend features and AR functionality.

The router also enables research activities by allowing the collection of citation data for documentation needs.

Conceptual Model of the Study

Salawu et al. (2023) defined the key concepts, variables, and relationships that serve as a roadmap for researchers to understand their interrelationships. It guides the research process and helps researchers develop research questions or hypotheses.

KNOWLEDGE REQUIREMENTS
- Augmented Reality Technology
- AI-Driven Chatbot in E-Commerce
- Web and Mobile Application Development
- Database Management
- Inventory and Order Management

SOFTWARE REQUIREMENTS
- Java EE (Jakarta EE)
- DeepAR
- Firebase
- Windows OS (10 in 11)

HARDWARE REQUIREMENTS
- Desktop Computer
- Laptop
- Mobile Device
- Printer
- Router

AGILE METHODOLOGY
1. Requirements
2. Design
3. Develop
4. Test
5. Deploy
6. Review

SmartFit: Augmented Reality-integrated Footwear Retail and Customization Portal with AI-Powered Assistance

Evaluation

Figure 1.0 Conceptual Model of the Study

Figure 1 represents the conceptual model of the study which includes four phases, namely Input, Process, Output, and Evaluation.

The input phase utilized knowledge requirements along with software requirements and hardware requirements to shape system development. The project requires employment of essential knowledge areas, including Augmented Reality Technology and AI-Driven Chatbot in E-Commerce and web-based System Development, alongside Database Management System and Inventory and Order Management. The system requires Java EE (Jakarta EE) together with DeepAR along with Firebase, as well as Windows OS (version 10 or 11) for software needs. Also, the hardware requirements include a desktop computer together with a laptop and mobile device, a printer, and a router.

The process phase shows the Agile Methodology, which the proponents had observed during the development of the system. The Agile Method includes six (6) phases namely Requirement, Design, Develop, Test, Deploy, and lastly, Review.

The output phase is the result of the input and the process phase combined, which is SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance. The final phase is Evaluation.

Operational Definition of Terms

The following are terms that are operationally defined for a better understanding of the study:

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal – a web-based system that enhances the virtual shopping experience through AR technology, managing footwear customization, transactions, and inventory.

Administrator – the individual controls shop creation validation (approving or rejecting) and holds the power to delete accounts.

AI Assistant – refers to the system-integrated chatbot or virtual assistant that offers user assistance through question answering.

Customer – refers to the buyer who uses the system to browse, customize, and purchase footwear products.

Mobile Devices – the smartphone-accessible version of the system used by customers to use the augmented reality feature.

Product – refers to the footwear items offered and displayed in the system for customization and purchase.

Transaction – a complete process involving product selection, customization, payment, and confirmation of purchase.

User – general term referring to both customers and sellers or business owners who interact with the system.

Web Application – the browser-accessible version of the system used by customers and administrators.

Chapter 3

METHODOLOGY

This chapter includes the project design, database design, project development, operation, and testing procedures.

Project Design

The SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance is a web-based system for online shoe retail for footwear customers and shop owners. All users must register for an account to access the developed system. The customers can explore products using the Augmented Reality feature for shoe try-ons through the website. The customers can customize their designs with real-time cost estimates before finalizing a purchase. The developed system allows shop owners to create shoe listings, including inventory management and report the delivery status of customer orders. Customers can use an AI-powered chatbot for support and inquiries about the developed system functions. The developed system includes offering product reviews and ratings. Also, the developed system allows shop owners to track their sales and generate business performance reports. The Admin is responsible for processing and approving shop owner account applications. This integrated platform improves customer engagement and enhances the management and operational efficiency of footwear businesses.

Use Case Diagram

As stated by Mahr (2023), a use case diagram is a behavioral diagram used to depict a system's interaction with actors or users. It describes and models system functionality, primarily capturing a system's functional requirements. Use-case diagrams are typically employed in the analysis and design stages of system development.
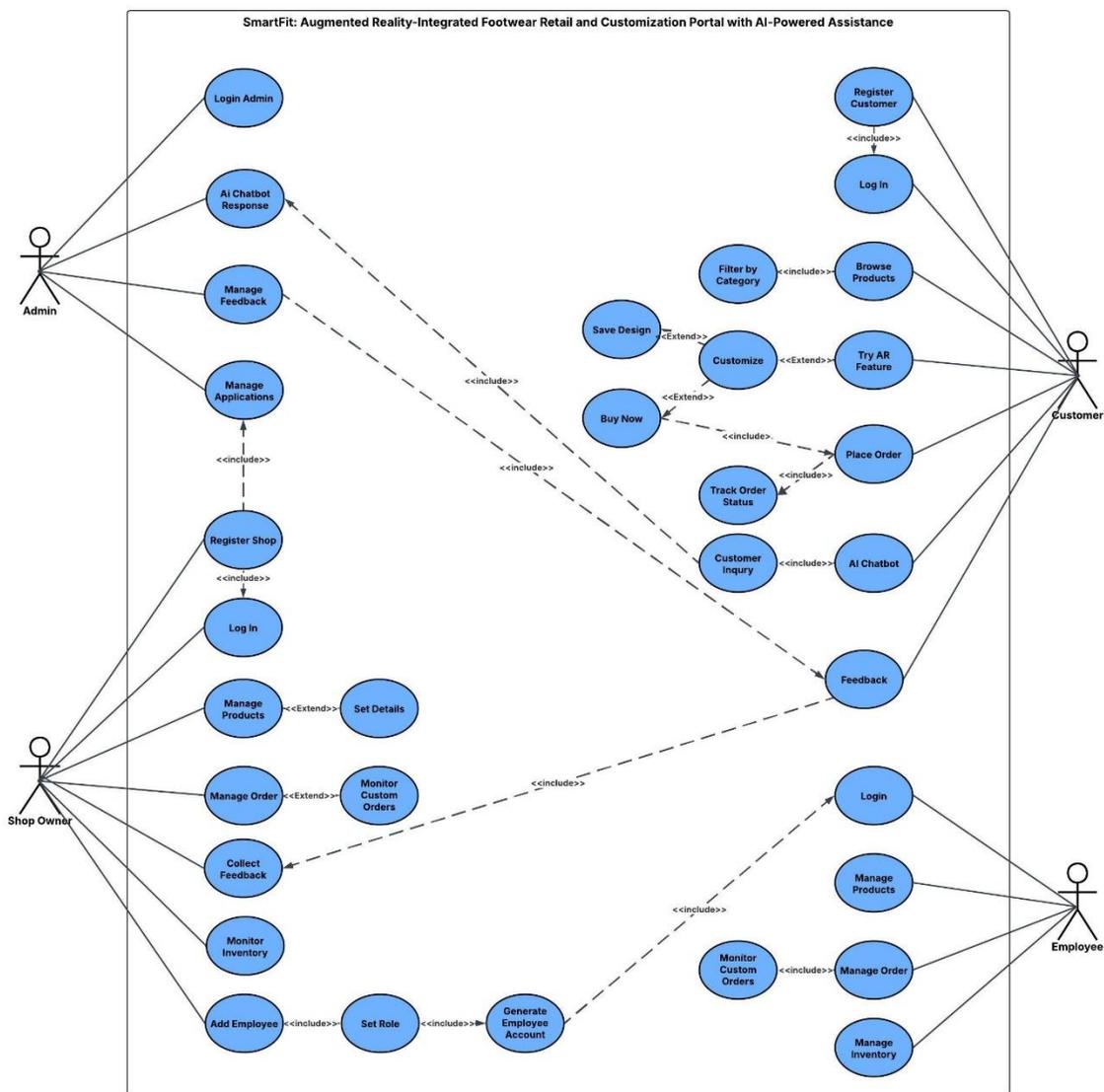
Figure 2.0 Use Case Diagram

Figure 2 shows the use case diagram of the SmartFit platform which is an augmented reality integrated footwear retail and customization portal with AI enhanced support. There are four key actors accommodated by the system; Customer, Shop Owner, Employee, Admin. Customers are able to register or log in, browse and filter products, make use of the AR feature through the website, place and track orders, manage their cart and profile, provide feedback and engage the AI chatbot. Shop Owners can register their shop, upload documents to be approved and once approved can operate on products, orders, inventory, receive low stock alerts and add employees. Employees have the same set of functionalities that a shop owner would have, such as product admin, order management and stock monitoring. But managers only have access to sales records. Also, employees are not allowed to add other employees. The Admin helps to check and approve or reject shop owners' applications with correct notification, administers AI chatbot responses by adding, editing or deleting entries to provide smooth communication in the platform.

Activity Diagram

According to Carter (2024), activity diagrams are tools used for visualizing various steps involved in a process. It is an activity diagram in the Unified Modeling Language (UML), used for describing the activities' flow within a system. It is an illustration of activities that need to be performed in order for some goal to be fulfilled and is used for the visual description of processes, workflow, and control of flows within a system.
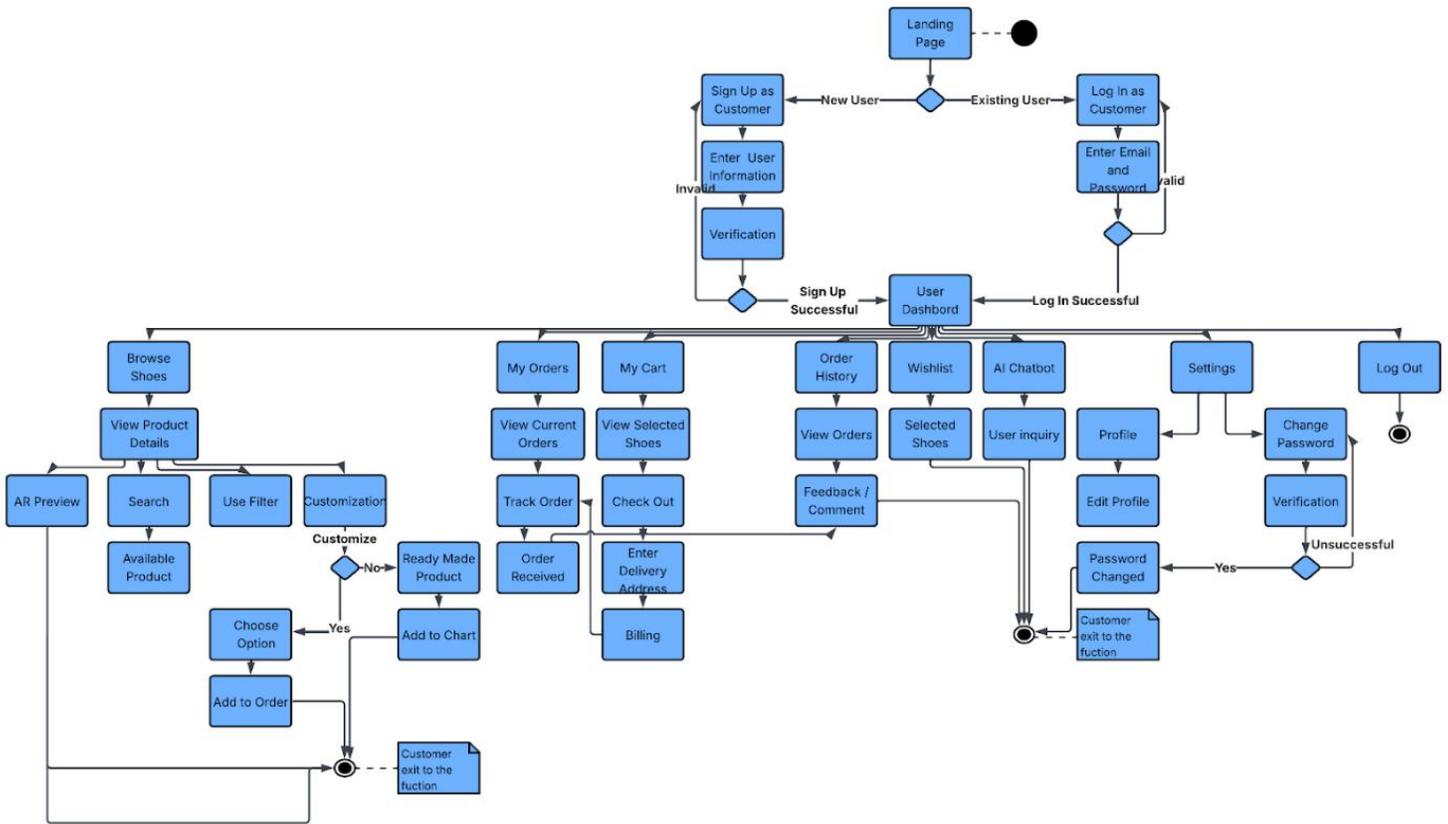
Figure 3.0 Activity Diagram (Customer Side)

In figure 3, In order to access the developed system, customers start from the landing page where they have an option to register or login. The new customer provides necessary information and gets verified through email before accessing the customers dashboard. Current customers can log in by using their credentials. Customers from the dashboard can explore offered footwear, read product descriptions, available stock, use filters and use augmented reality previews with the direct link to web browser. For customizable products, customers input choice options like color that is available, then place adds to cart or place order directly. Customers are able to see and track current orders, access checkout, enter

delivery details, and choose payment methods using QR code. Upon successful

payment a digital receipt was provided. Failed transactions trigger a retry option.

Other features include order's history viewing, placement of feedback, wish list,

customer inquiries using AI chatbot. Account settings enable uploading profiles

and changing passwords and verify. There is a logout function which safely closes

the session.
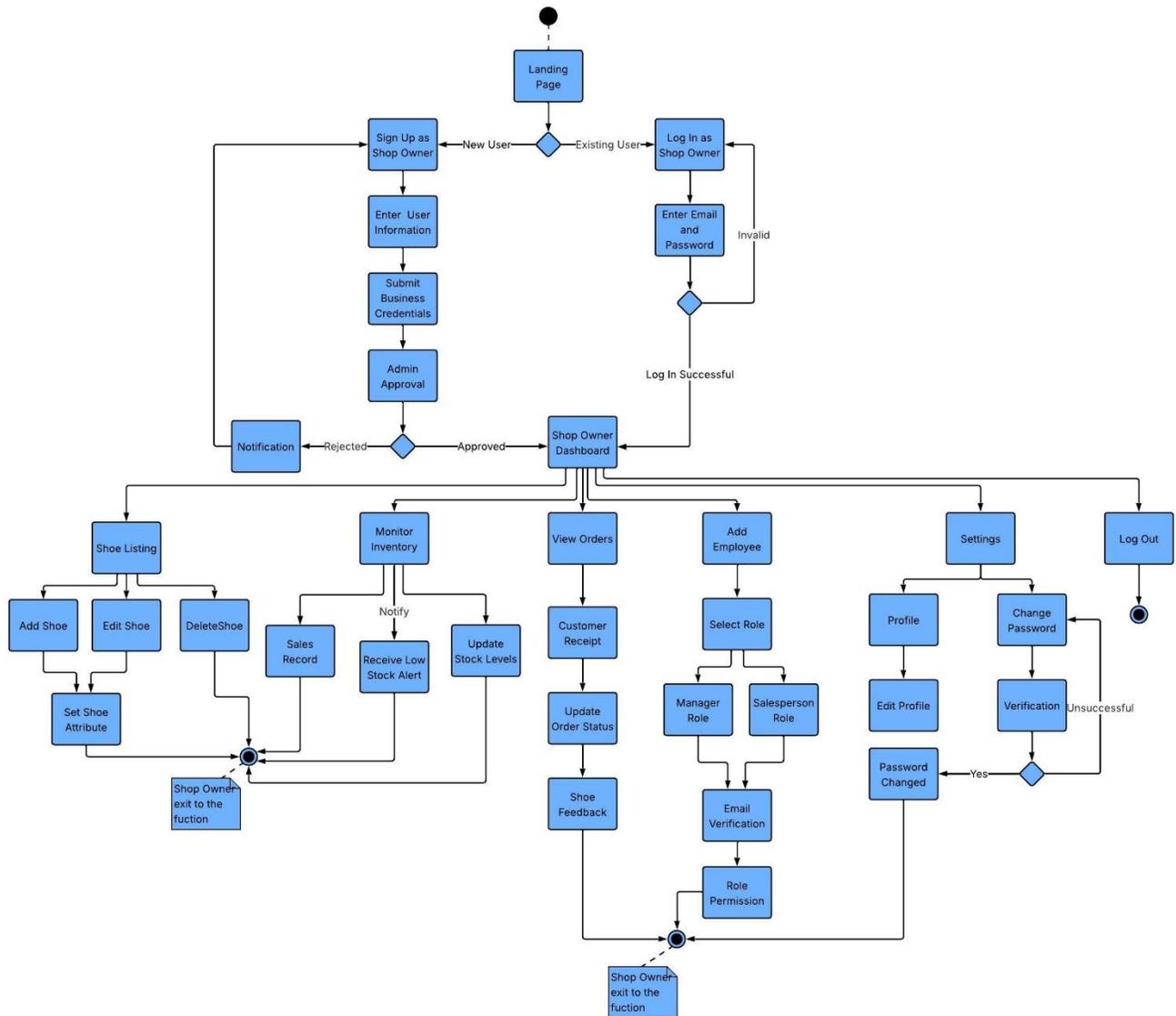
Figure 4.0 Activity Diagram (Shop Owner Side)

In figure 4, the shop owner may either register by providing personal information and business credentials for admin approval or log in using authorized credentials. After approval or successful login, the shop owner is able to enter the dashboard. In the dashboard, the shop owner can place products by adding, editing, or deleting shoes, whereby one can even detail a particular product specification. It supports inventory monitoring, sales records, low stock notifications are received, and update stock levels. Also, the shop owner can control customer orders, view order details, issue receipts, update order status, and view customer feedback. The shop owner can also manage employees by assigning them roles such as manager or salesperson, with permission attached to roles through email verification. In addition, account settings enable the shop owner to edit profile information and reset passwords but only on verification. The activity closes once the shop owner logs-out or leaves the function.
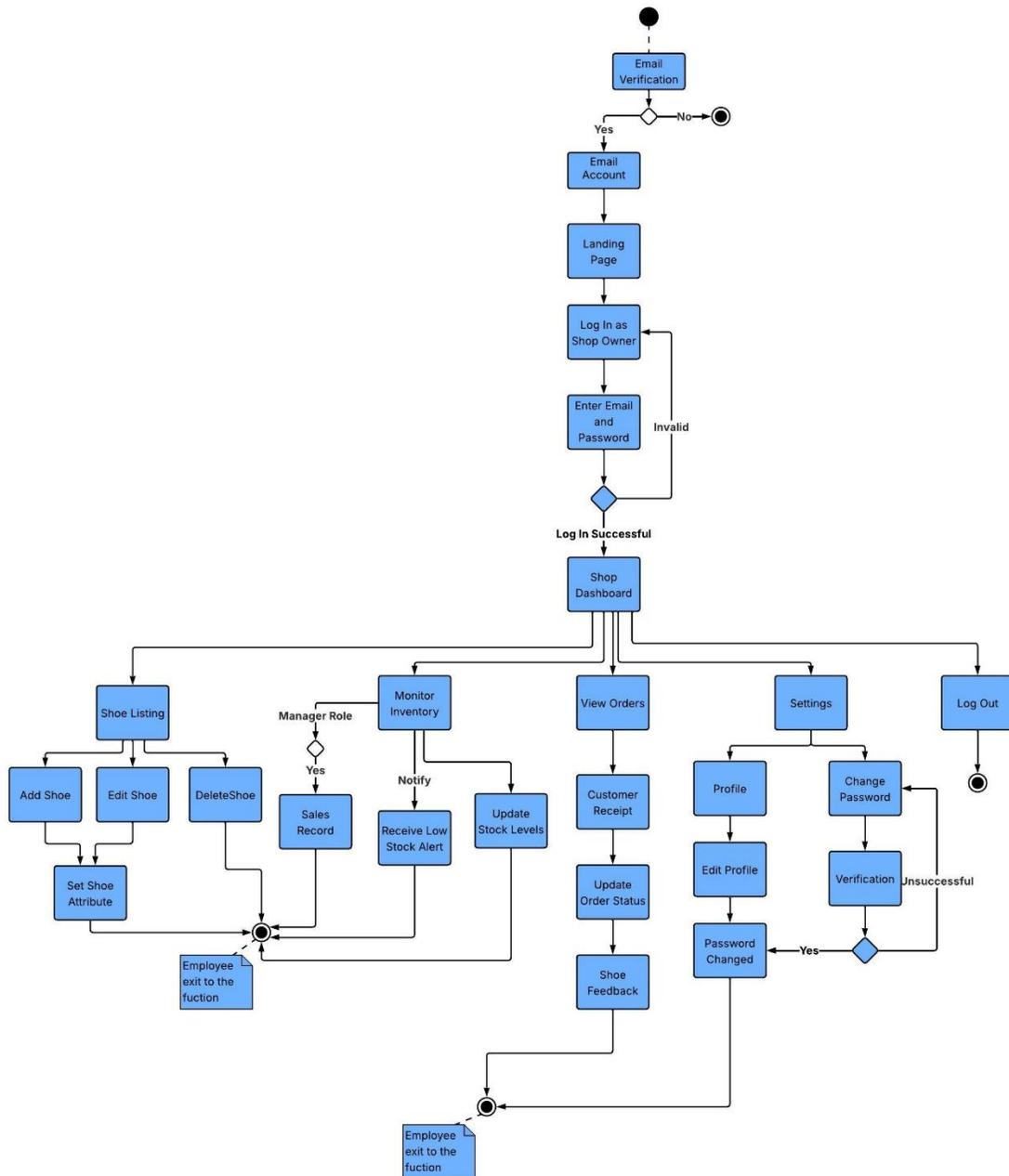
Figure 5.0 Activity Diagram (Employee Side)

In Figure 5, the employee begins with email verification. Once they have been verified, they have to log in using their credentials. After logging in, it directed to the shop dashboard. The employees can control shoe listings, adding, editing, or deleting shoes. Employees can also monitor stock, have alerts on low stock and

update stock levels. Employees can view and update customer orders, accessing customer receipts and respond to customer feedback. In settings, they may update their profile and change their password after verification. However, only employees having a manager role can access the sales record. The session is ended when the employee signs out or exits the function.
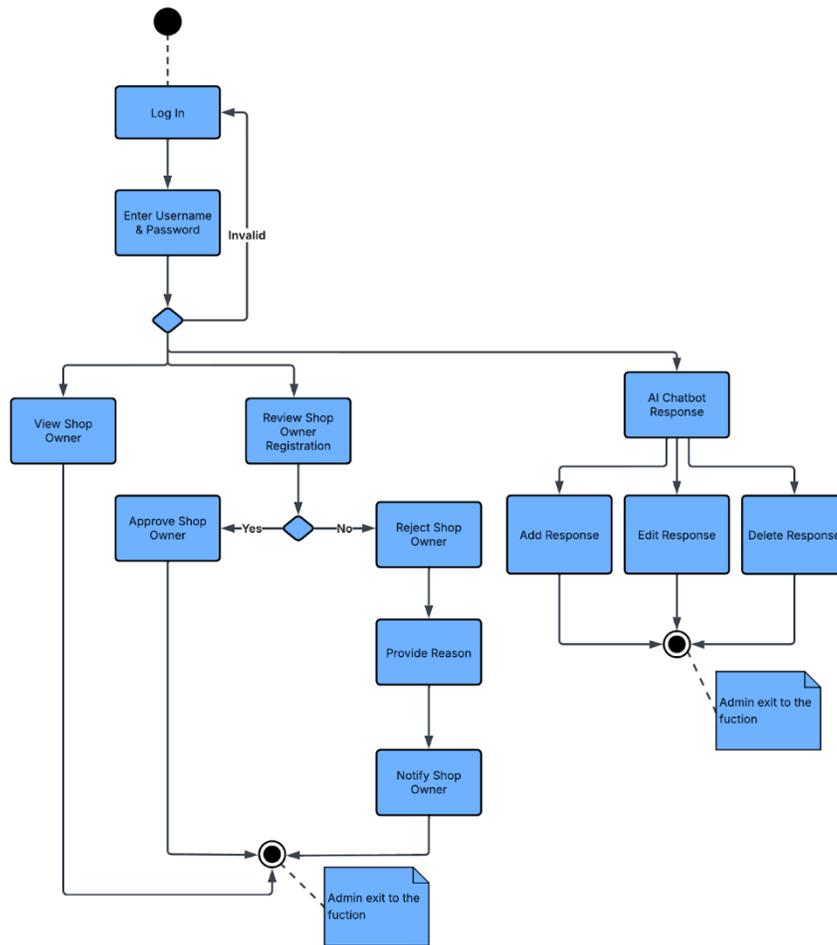
Figure 6.0 Activity Diagram (Admin Side)

In figure 6, to log into the admin side within the developed system, the admin first login using credentials. The admin was made to open up system functionalities such as viewing the registered shop owners and viewing the shop owners'

registration requests from new ones. While going through the review, the admin evaluates the sent business credentials and documents. The administrator approves the shop owner then on the registration if it meets the appropriate requirements. Otherwise, the registration is denied, and a reason is given and a formal notification is given to the shop owner. The admin controls AI chatbot responses such as add, edit, or delete the predefined system answer to customer questions. The administrator can then move on to perform other tasks, or when done exiting the administrative interface he can exit the entire session.

Database Design

The database design contains the entity-relationship models and data dictionaries that were used to develop the system. Some of the major tables are Customer, Shoe, and Shop Table.

Entity Relationship Diagram

Belcic and Stryker (2024) describes an Entity Relationship Diagram (ERD) as a visual representation of the relationships between the elements in a database. ERDs are a specific kind of flowchart that illustrates the relationships between various elements in a system. They employ a predetermined collection of symbols, such as diamonds, ovals, and rectangles, and connect them with lines.
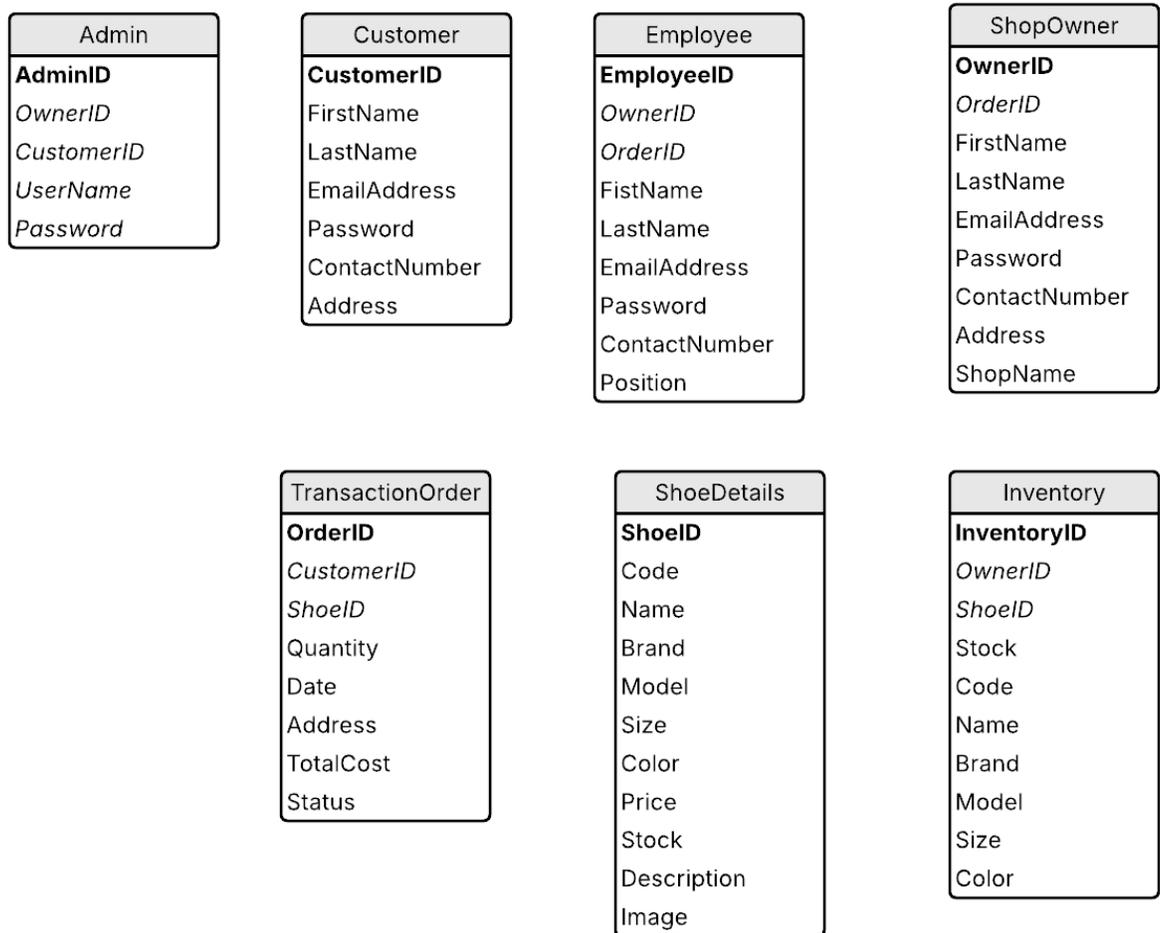
Figure 7.0 Entity Relationship Model

Figure 7 illustrates the NoSQL data model of SmartFit: A Developed Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance uses Firebase Firestore to fund shoe sale operations by controlling inventory, handling user-accounts, and transactions. The database is designed into various collections of Admins, Customers, ShopOwners, Employees, ShoeDetails, Inventory, and TransactionOrder all of which contain documents containing the appropriate information.

The management of user accounts is carried out through the admins collection, which can work with the documents of both the Customers and ShopOwners collections. Customers collection relates to TransactionOrders collection where data such as purchase records of customers is stored. Equally, the ShopOwners collection refers to the Employees and Inventory collection to trace their store staff and product stocks.

Each transaction is saved to the TransactionOrders collection and can have transaction reference to the employee who placed the order and embedded or linked shoe records of the ShoeDetails collection. The availability and quantity of products are handled in the Inventory collection that keeps shop-specific data and references to products in ShoeDetails. This system enables every shop owner to have complete access to his inventory as well as enabling scalability and real-time data access and updating across the platform.

Data Dictionary

UC Merced Library (2023) explained that a data dictionary is a collection of names, attributes, and definitions for data elements used in a database or research project. It explains what each data element means and how to use it correctly. It includes metadata about data elements, which helps define their scope and characteristics and the rules for how they should be used and applied.

Table 1.0 Customer Table

System Name: Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance				
Subject: Customer Table				
PK	FK	Field Name	Data Type	Description
Yes	No	customer_id	INT	Customer ID
No	No	fname	VARCHAR	First Name
No	No	lname	VARCHAR	Last Name
No	No	email_address	VARCHAR	Email Address
No	No	password	VARCHAR	Password
No	No	contact_number	INT	Contact Number
No	No	address	VARCHAR	Address

Table 1.0 displays the Customer table of the Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance. This table holds the data of the customer. This table's fields include: customer_id, fname, lname, email_address, password, contact_number, and address.

Table 2.0 Shoe Table

System Name: Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance				
Subject: Shoe Table				
PK	FK	Field Name	Data Type	Description
Yes	No	shoe_id	INT	Shoe ID
No	No	code	INT	Code
No	No	name	VARCHAR	Name

No	No	brand	VARCHAR	Brand
No	No	model	VARCHAR	Model
No	No	size	INT	Size
No	No	color	VARCHAR	Color
No	No	price	INT	Price
No	No	stock	INT	Stock
No	No	description	VARCHAR	Description
No	No	image	IMAGE	Image

Table 2.0 presents the Shoe table of the Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance. This table holds the data of the shoes. This table's fields include: shoe_id, code, name, brand, model, size, color, price, stock, description, and image.

Table 3.0 Shop Table

System Name: Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance				
Subject: Shop Table				
PK	FK	Field Name	Data Type	Description
Yes	No	shop_id	INT	Shop ID
No	Yes	order_id	INT	Order ID
No	No	fname	VARCHAR	First Name
No	No	lname	VARCHAR	Last Name
No	No	email_address	VARCHAR	Email Address
No	No	password	VARCHAR	Password
No	No	contact_number	INT	Contact Number

No	No	address	VARCHAR	Address
No	No	shop_name	VARCHAR	Shop Name

Table 3.0 shows the Shop table of the Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance. This table holds the data of the shop. This table's fields include: shop_id, order_id, fname, lname, email_address, password, contact_number, address, and shop_name.

Project Development

Based on Laoyan (2025), the Agile Methodology is an approach for project management that divides work into numerous dynamic stages called sprints. An iterative process is the Agile framework. Teams evaluate their performance at the end of each sprint to determine what may be done better so they can modify their approach for the sprint that follows.

The system that was developed have used an Agile-based approach, focsuing on flexibility, teamwork, and continuous deployment. The use of Agile allows the development team to deliver functionality in cycles; for example, the Augmented Reality capability, Artificial Intelligence (AI) assistance, and shoe design customizing are divided into smaller, more manageable pieces and delivered in Sprints. The Agile methodology allows for continuous feedback from users and quick responses, so the system can be adjusted quickly to meet changing goals and user expectations. Even though there was a degree of planning done initially to define the project's scope, the focus remained on

adaptability and responsiveness; therefore, the development and testing activities were performed concurrently so that the team could maximize efficiency while continuously refining the system via real-time feedback and incremental enhancements.
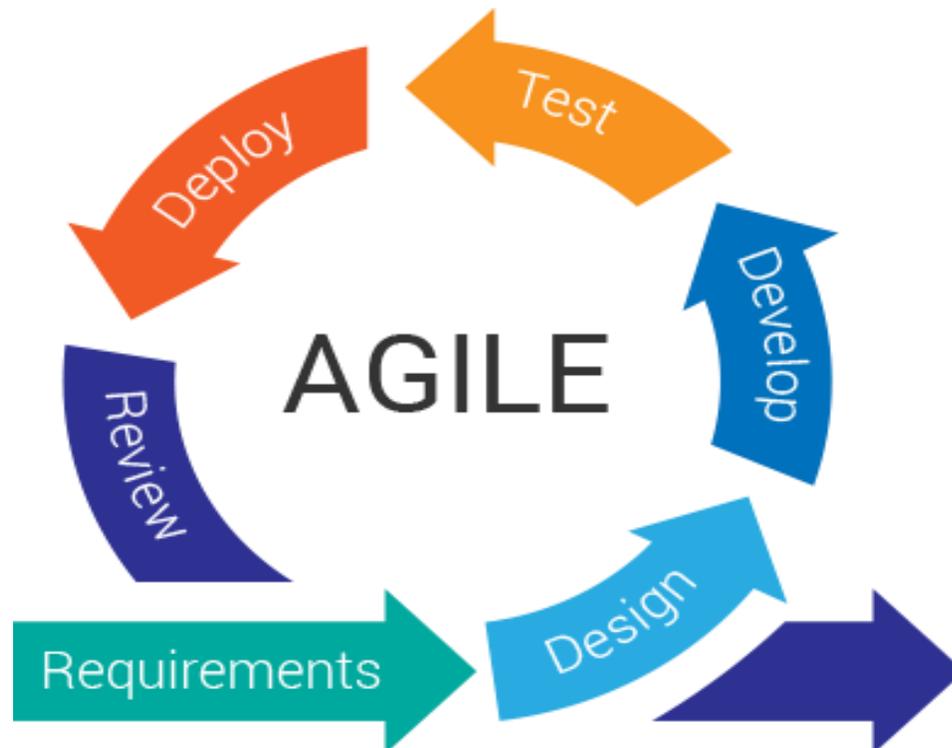
Figure 8.0 Agile Model

Reference: https://medium.flutterdevs.com/what-is-agile-methodology-in-mobile-app-development- fa83ed6ac09

Requirements

Asana (2021) defined requirement gathering to be the detailed awareness of all the needs required of a project from start to finish. This process takes place during the project initiation phase, but it is necessary to check and update the project needs throughout the project overall.

In this phase, the proponents determined essential features for the developed system by combining AR and AI capabilities before collecting user input. This ensures that the system achieved both user expectations and project objectives.

Design

According to Senarath (2021), system design was to take user's requirements into detail to create a plan that should guided the development process. This plan helped determine how the system's architecture was structured, how the users interacted with it, and how the system performed. Before deploying, the plan helped ensure that the technical capabilities met functional requirements.

In this design phase, the proponents established the system structure and the developed system framework including its interface, to ensure that all components such as customizing options for virtual fitting were integrated effectively. The focus of the design phase was to establish the user interface, which included ensuring that the design mets the functional specifications of the project.

Develop

According to Asana (2024), an implementation plan was a completed outline of what the team must do to achieve its common objectives. Important parts of the implementation or strategic plan include the overall strategy, the process involved, the actions needed, etc. It includes all parts of the project from the amount of project scope to the budget or cost determination. Some guidelines are

available for understanding the implementation plan concept and approach to discussing how to develop the plan.

The coding of the system, as well as the architecture and design of the proposed system, began in this phase. It was in this phase that a user interface was developed by the proponents to meet the functional requirement of the system.

Test

Bensaid et al. (2025) mentioned that older frameworks like the V-model demand testing followed a fixed sequence, step by step, making sure each piece got reviewed. Such approaches support solid software quality since checks happened early, catching issues before they grow.

The testing process checks wheter every part of the system does what it's supposed to do. Since functionality matters, the proponents ran unit tests alongside integration checks this helped spots bugs while also making sure performance lined up with goals.

Deploy

As highlighted by Sable (2023), deployment is one of the critical phases within the software development cycle where the software program or system is released and made available to users. It involves the installation, configuration, and activation of software within the intended environment to ensure seamless integration and optimum performance.

The proponents have deployed the developed system for integration into the user environment. In this phase, user setup and configuration work followed system deployment to enable public implementation of the system.

Review

According to Joshi et al. (2021), the review phase in Agile methodology is one of the most important processes since it involves reflection on the tasks that are carried out, noting any difficulties, and strategizing on what can be done better the next time. This phase incorporates technical and group feedback-based practices of gathering, measuring, and adapting the planning as well as improve the overall effectiveness and efficiency of the project. Moreover, the review step can facilitate corrective as well as proactive measures to guarantee that the development process follows project objectives and becomes more effective over the time.

In this stage, the project is successful based on periodic team reflections and enhancements after every cycle. The proponents implemented reviews to define what worked, issues the proponents faced, and suggestions on improvements. The continuous process assists in keeping the project-related goals attuned, enhances effective teamwork, and ensures that the developed system remains effective in serving the needs of its users as they change and develop.

Gantt Chart

Bianconi (2024) defined gantt charts as a commonly utilized project management tool that illustrate work over a specific period in the form of horizontal lines. A horizontal line represents a distinct task that corresponds to the duration it takes to accomplish it, while the beginning date and end date are also marked clearly on the chart. They also enable activities to be clustered in phases to view the organization of the project better and to acquaint the project teams with the total timetable and workflow.

No.	Task Name	Start Date	End Date	Duration (Days)
1	**Planning**			
1.1	Brainstorming	24/01/2025	27/01/2025	3
1.2	Planning	27/01/2025	30/01/2025	3
1.3	Scheduling	30/01/2025	31/01/2025	1
2	**Requirements Analysis**			
2.1	List of Proposed Titles	30/01/2025	03/02/2025	4
2.2	Research about the system	08/02/2025	15/02/2025	7
2.3	Letter of Intent	27/03/2025	31/03/2025	4
2.4	Interview	13/03/2025	01/04/2025	19
	Design			
3	Mock-ups			
3.1	Chapter 1	27/02/2025	04/03/2025	5
3.2	Revision of Chapter 1	07/03/2025	27/03/2025	20
3.3	Topical Outline	27/03/2025	29/03/2025	2
3.4	Chapter 2	28/03/2025	25/04/2025	28
3.5	Chapter 3	02/05/2025	09/05/2025	7
4	**Implementation, coding, or development**			
4.1	Registration/Login	12/03/2025	22/04/2025	41
4.2	Inventory Management	23/04/2025	25/04/2025	2
4.3	Augmented Reality Try-On	28/04/2025	07/10/2025	132
4.4	Shoe Customization	28/04/2025	12/10/2025	137
4.5	Shoe Ordering Module	29/04/2025	08/08/2025	71
4.6	Order Tracking System	29/04/2025	08/08/2025	71
4.7	AI Driven Chatbot Support	17/04/2025	29/08/2025	104
4.8	Feedback and Review System	03/05/2025	13/05/2025	10
4.9	Report Generation	06/05/2025	14/05/2025	8
5	**Testing**			
5.1	Unit Testing	14/03/2025	15/09/2025	127
5.2	Integration Testing	16/05/2025	15/09/2025	61
5.3	System Testing	13/09/2025	18/09/2025	5
5.4	Performance Testing	14/09/2025	26/09/2025	12

Legend
Ongoing:
Accomplished:

Figure 9.0 Gantt Chart

Figure 9.0 represents the Gantt chart that shows the timeline of activities, or phases listed, which consist of planning, requirements analysis, design, development, and testing. The system development started on January 27, 2025, to October 20, 2025. The proponents started the development with brainstorming, deciding which title or topic to propose based on some circumstances. When the final title was approved, the proponents started planning the project proposal and scheduling the development process of the system. In gathering data, they started preparing a letter of intent addressing the company's approval of their research, followed by conducting an interview with the company. After gathering the data needed, the proponents started developing the system. They began initially working with the documents so that they could plan and organize the process they followed and serve as a basis after deciding what to do in developing the web and application. After completing the whole system, the proponents conducted a series of testing procedures to ensure that the system is working properly starting with the unit testing, followed by the integration testing, then the system testing, and lastly, the performance testing.

Operation and Testing Procedure

In this section, the process of operation and testing procedure was discussed. The different testing procedures, such as unit testing, integration testing, system testing, and performance testing have also been discussed.

Operation Procedure

Customers must complete the registration form to create an account, after which they are redirected to their profile dashboard, returning customers can log in using their credentials. Upon login, customers access the homepage where they can browse available footwear, check product details, filter by brand, size, or price, and try products virtually using Augmented Reality try-on using a QR code or direct web access. For shoe customization it allows the customer to select options including color and patterns by clicking "Customize" before continuing to add the product to their cart. Customers enter their delivery information and pay using QR code payment at checkout before receiving an automatic digital receipt. The order dashboard contains order tracking features alongside delivery status. Also, an AI-chatbot feature answers general system inquiries.

Shop owners must register through an application process that requires business documentation submission, which the admin needs to verify before having a shop owner account. Shop owners can access a dashboard where they handle footwear listings by creating, updating, and removing products. Also, editing shoe sizes, colors, pricing, customizing products, and inventory tracking. They can view and process customer orders, receive real-time updates (e.g., preparing, shipped, delivered), generate digital receipts, and fulfill customization requests according to customer input. Inventory monitoring and low-stock alerts are also available. Shop owners may add employees with role-based access. Employee accounts are verified through email upon creation. Managers can

manage products, orders, analytics, and inventory. Salespeople can handle sales and inventory only.

Admins log in through a dedicated portal and are responsible for account and customer management. Admins have full authority to view or delete customer and shop owner accounts, and review submitted documents to approve or reject shop owner registrations.

Testing Procedure

The testing procedure shows how different testing procedures, such as unit testing, integration testing, system testing, and performance testing, was performed by the proponents to determine the system's functionality.

1. Unit Testing

BasuMallick (2022) defined unit testing as an approach of quality assurance that decomposes the code of an application into component blocks to ensure that individual blocks work as intended, including the associated data as well as usage procedures. All other tests are based on unit testing; hence, their reliability and completeness are very important in ensuring the efficacy of other tests as well as the functionality of the entire software.

The proponents executed unit testing by isolating and validating each sub-process. This includes the modules for registration, login authentication, product listing by shop owners, AR virtual shoe try-on feature, customization logic, order

placement, payment confirmation, and stock update mechanisms. It ensures that every small part operates as intended before integration with others.

2. Integration Testing

Taylor and Taylor (2024) described integration testing as the process of combining several components into one entity and testing them. All components have been tested individually through unit tests; the purpose of integration testing is to ensure that when all parts are combined, the system works as it was meant according to the requirements. Additionally, it also allows for step-by-step check as new features are added.

The proponents implemented integration tests to determine the correct functionality of developed modules of the created system. They checked whether the changes made by the owners of the stores to the order statuses appear correctly in the dashboards of the customers and of the employees concerned with them by roles defined for them. In this part of the tests, they verify how the modules separately created cooperated and thus communicated data correctly.

3. System Testing

According to Luu (2022), system testing conducted on an integrated system to ascertain that it meets all specified requirements. This testing performed on components which have already passed integration tetsing. The behavior of the system observed indicates the response of the system to the different test conditions.

The proponents conducted system tests to analyze the complete functionality of the developed system. During system testing the platform checks its operational capacity against functional specifications while validating how it responds to user input. It additionally maintains consistency throughout different user roles.

4. Performance Testing

In accordance with Sandman (2024), performance testing is a form of non-functional testing that examines how a system behaves and responds under a specific workload. It is not necessarily about detecting coding bugs but also determining where the performance bottlenecks are and making sure the application meets its performance requirements for a good user experience.

It was able to evaluate the service and experience of the users provided by the performance of the application. This test was done by the proponents so that relative improvements could be counted to further improve the system. The proponents also got feedback from the users.

Table 4.0 Test Script Form

Date	
Tested by	
Test Case Number	
Test Case Name	
Test Case Description	
Item(s) to be tested	
Procedural Steps	
Specifications			
Input	Expected Output/ Result	Pass Y/N	Actual Result/Output

Evaluation Procedure

The following activities were conducted by the proponents during the evaluation process:

1. The proponents set up the system.

2. The proponents distributed survey forms to the selected respondents for feedback.

3. The proponents provided a detailed explanation of the system's workflow to the respondents.

4. The proponents conducted tests on the system based on the criteria outlined in ISO 25010.

5. The respondents evaluated the functionality of the system by completing the survey forms.

6. The proponents gathered the completed evaluation forms from the respondents and analyzed the collected data thoroughly.

7. The proponents calculated the data using the weighted formula.

8. The overall rating was interpreted using a numerical range and descriptive interpretations using the Likert scale.

Table 5.0 Likert's Scale

Rank	Numerical Scale	Interpretation
5	4.51 – 5.00	Excellent
4	3.51 – 4.50	Very Good
3	2.51 – 3.50	Good
2	1.51 – 2.50	Fair
1	1.00 – 1.50	Poor

Chapter 4

RESULTS AND DISCUSSIONS

This chapter covers the discussion of the project description, including the structure of the project, capabilities, and limitations. This part also discussed the test results and the evaluation results of the project.

Project Description

SmartFit is a two-way innovation; it uses both Augmented Reality (AR) and Artificial Intelligence (AI) to improve consumer's experience in purchasing customized footwear and the overall retail shopping experience. SmartFit enables customers to try-on shoes with the ability to create their own design. In addition to the customers being able to create their own designs and try-on shoes, SmartFit provides store owners with the opportunity to track inventory levels, report on sales, and provide timely reporting as needed.

The potential end-users for this project are footwear shop owners, employees, and consumers looking to experience footwear shopping with the most innovative technology possible.

SmartFit is an easily accessible method for consumers, store owners, and employee's to be able to customize, purchase and/or sell shoes. To begin using the system, consumers register an account via the company's website. Registration requires the completion of all required fields like name and e-mail address. Once a user has completed the registration process, they may log-in to

the site to view products currently available, customize shoes, view the current price in real-time, and make purchases. After receiving the order, the customer can give product reviews and ratings through their account. The customer can open an Augmented Reality feature through the website to test out shoes virtually after which they can choose to purchase. In case of queries, the customer may consult the AI-powered chatbot available on the website.

The shop owner has registered an account through the website and log in to manage their online store. They can add new shoe listings by providing product details, images, and prices. They are also able to adjust inventory, change the product details, and remove products. The owner of the shop is able to view details of the order, make changes to the delivery, and ensure that a customer is informed when it comes to customer orders. The shop owner is also able to access the sales records page, where sales of the day, week, or month can be tracked; business performance reports produced; and customer comments consulted in order to enhance services.

The employee logged in through the website using the account provided by the shop owner. They were able to assist with the processing of orders, including confirmation of payment, preparation of the products to ship, and update the delivery statuses. They are also able to help in stock control by adding or removing stock adjustments and availabilities of the items. Employees may also respond to customer inquiries assigned to them by the shop owner.

Project Structure

This part shows the major forms of the system and highlights its main capabilities with a corresponding screenshot. This includes the inventory management module, augmented reality features, customization options, ordering module, order tracking system, AI-powered chatbot support, and a feedback system.
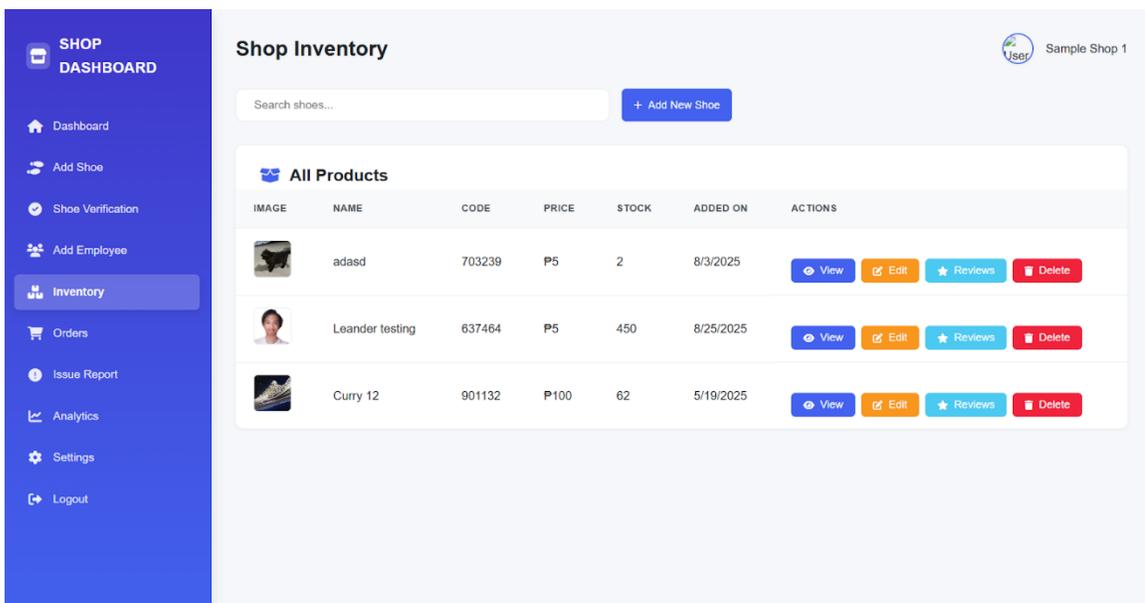
Figure 10. Inventory Management Module

Figure 10 shows the inventory management module that helps the shop owners and employees to easily manage the inventory, process orders, and update product availability.
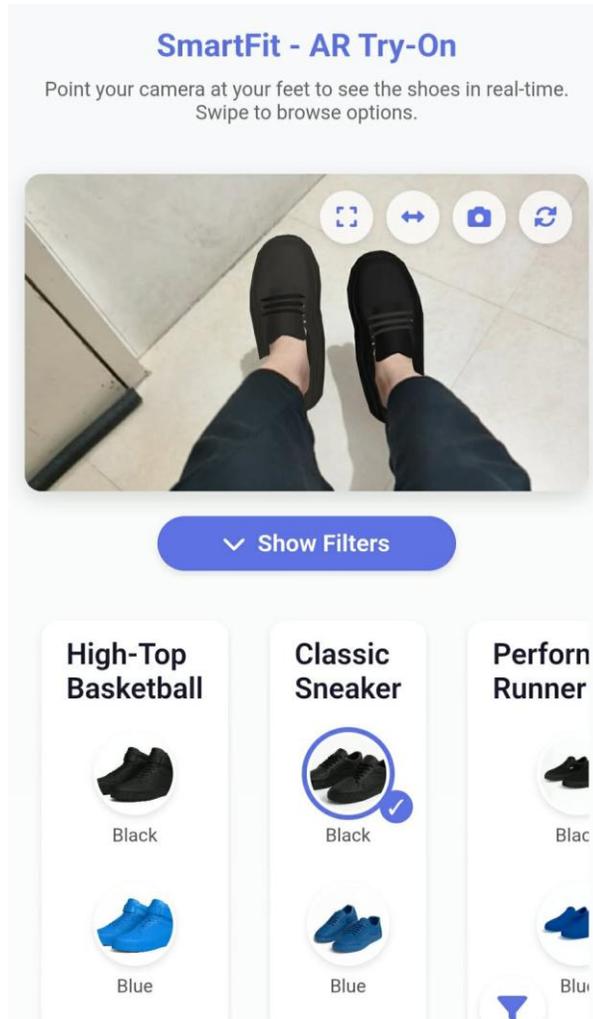
Figure 11. Augmented Reality (AR) Try-On

Figure 11 presents that the system allows customers to use the website to

try on shoes virtually using the Augmented Reality feature before purchasing.
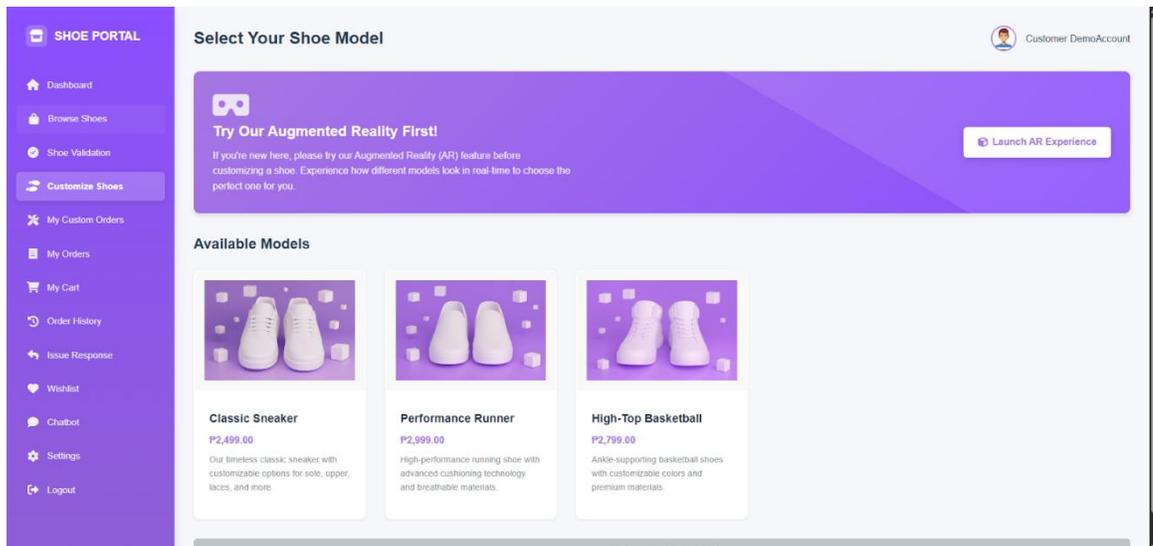
Figure 12. Customization

Figure 12 shows that the system allows customers to customize shoe designs and view the financial breakdown and total cost before placing an order.
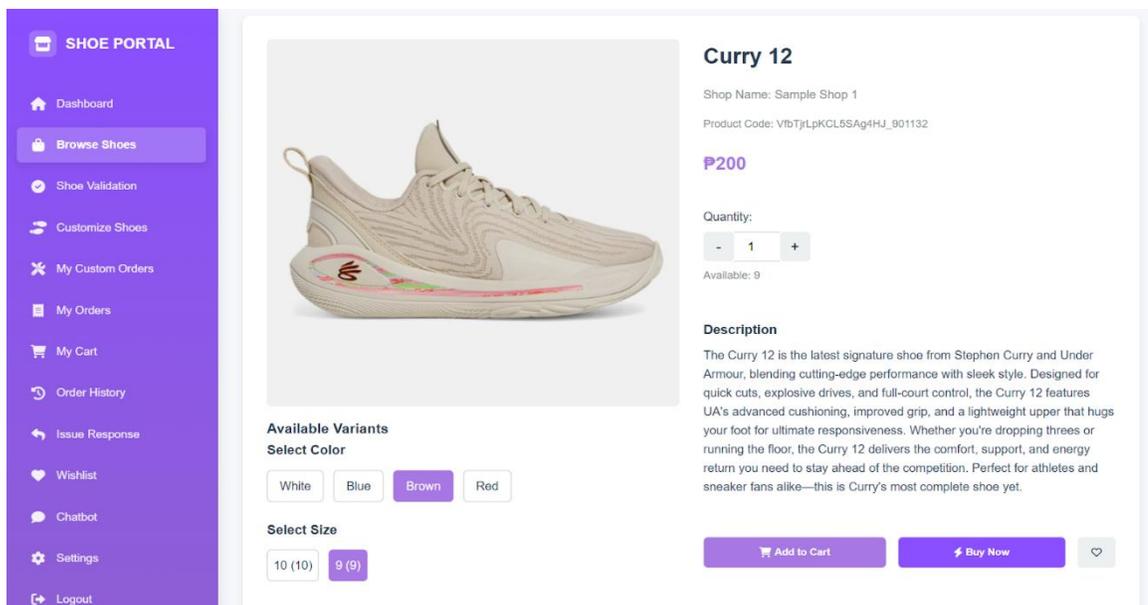
Figure 13. Ordering Module

Figure 13 displays the ordering page wherein the customer can easily place orders. It features the product details, select variants, and choose a quantity. Customers can either add the item to their cart or click buy now to proceed to checkout.
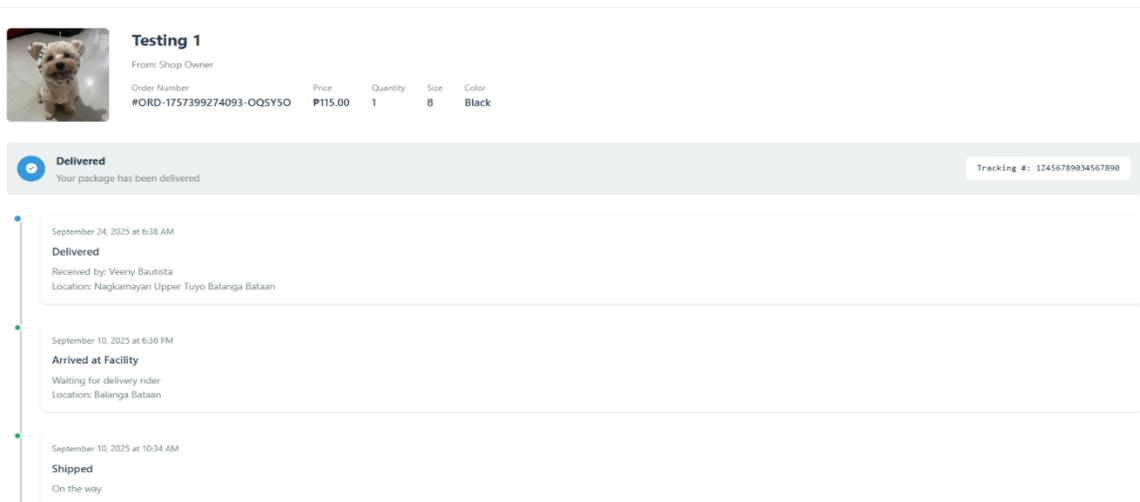
Figure 14. Tracking System

Figure 14 demonstrates how the system allows customers to track their orders and enables the shop owner and employees to update their delivery status.
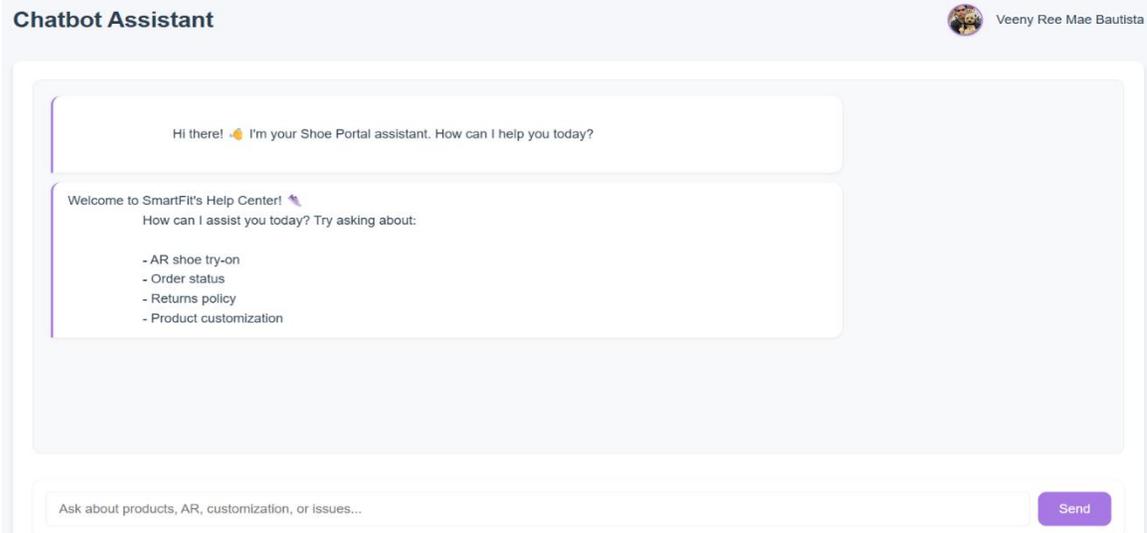
Figure 15. AI-Powered Chatbot Support

Figure 15 displays that the system provides an AI-powered chatbot on the website to assist customers with questions about the system and its functions.
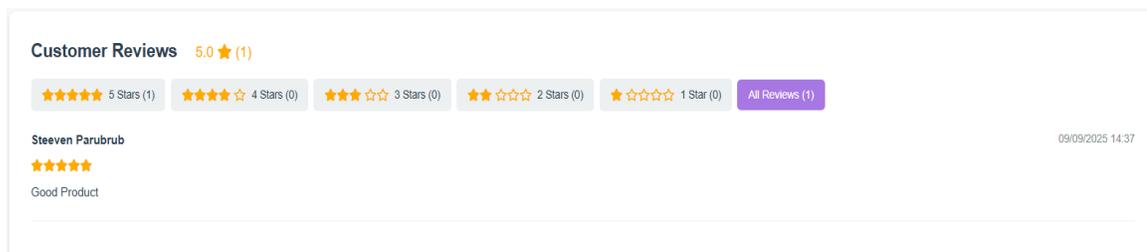
Figure 16. Feedback System

Figure 16 shows that the system allows customers to give product reviews and ratings, which shop owners can view to improve their services.

Project Capabilities and Limitations

The following are the capabilities of SMARTFIT: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance:

1. Allowing all users to register through the registration module;

2. Providing shop owners and adding employees with an inventory management module to update stock levels and manage the product catalog through the inventory module;

3. Enabling customers to access the augmented reality website that lets them try on the shoes virtually;

4. Offering a basic customization option for shoes that allows customers to personalize their selections and receive cost estimates through the customization module;

5. Facilitating customers to place shoe orders easily through the ordering module;

6. Implementing a tracking system that allows customers to monitor the status of their shoe orders in real time;

7. Integrating AI-powered customer support to assist customers with their inquiries;

8. Establishing a feedback system where users can submit ratings and reviews; and

9. Creating a report generation feature to collect data from the system for easy report creation.

The following are the limitations of the developed system:

1. The system exclusively features products from a single shoemaker.

2. AR try-on is also offered only on compatible devices that is supported by WebAssembly (Wasm) and WebGL.

3. Although the AR feature doesn't provide accurate foot measurements, it effectively enables visual previews of the items.

4. The platform supports the Classic sneaker, Performance runner, and High-top basketball models of AR shoes.

5. Only the authorized users can manage the inventory.

6. The system does not process payment transactions.

7. It needs a stable internet connection for all core functions.

Test Results

The test results show the different testing procedures for the major capabilities of the system. It presents the items tested, the expected outputs, and the actual outputs. The developers checked the system's performance and verified its functionality to ensure it meets the intended requirements.

Table 6.0 Inventory Management Module Test Script	
Date	September 09, 2025
Tested by	Marc Steeven Parubrub
Test Case Number	001

Test Case Name	Inventory Management Module
Test Case Description	This allows the shop owner and employees to update stock levels and manage the product catalog.

Item(s) to be tested	
1	Inventory
2	Add New Shoe Button
3	(X) Button
4	Add Size Button
5	Remove Variant Button
6	Add Color Variant Button
7	Add Shoe Button
8	View Button
9	Edit Button
10	Reviews Button
11	Delete Button

Procedural Steps	
1	After Logging in, Click the Navigation Bar "Inventory"
2	Click Add New Shoe Button Fill in the required information about the shoes and upload an image.
3	Click (X) Button
4	Click Add Size Button
5	Click Remove Variant Button
6	Click Add Color Variant
7	Click Add Shoe
8	Click View Button
9	Click Edit Button
10	Click Reviews Button
11	Click Delete Button

Specifications			
Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
Inventory	When Inventory is clicked, the system prompts the user to the Shop Inventory Page.	Y	User directed to shop inventory page
Add New Shoe Button	When the Add New Shoe Button is clicked, the user redirected to the Add New Shoe Form.	Y	User directed to add new shoe form
(X) Button	When the Close Button is clicked, it should remove the size & stock.	Y	The size & stock are removed.
Add Size Button	When the Add Size Button is clicked, it should add a size & stock to the form.	Y	Size & stock are added to the form
Remove Variant Button	When the Remove Variant button is clicked, it should remove the color variant that the user entered.	Y	The color was removed from the variant.
Add Shoe Button	When the Add Shoe button is clicked, all of the shoe information that the user has entered should be upload to the shop inventory.	Y	Uploaded in the Shop Inventory
View Button	When the View button is clicked, the entire shoe details should appear.	Y	View the Shoe Details
Edit Button	When Edit button is clicked, the user can edit the shoe details.	Y	Edit the shoe details
Reviews Button	When the Review Button is clicked, the customer reviews appear.	Y	Customer Reviews
Delete Button	If the Delete button is clicked, the system prompts a confirmation whether the user is certain about the deleting the shoe product.	Y	Confirmation
		Y	

	If user clicks the Cancel button, the shoe product was not deleted. If user clicks the OK button, the shoe product should remove from the inventory.	Y	Shoe Product is not deleted Shoe Product is deleted

Table 6.0 represents the test script for Inventory Management Module. The system inventory features were tested and worked as expected. The shop owner and employees are able to add, edit, and delete shoe products, sizes, colors, and stock levels. Customers are also able to review the products and reviews on the module. In case of wrong action being chosen, the system requires confirmation before the changes are affected.

Table 7.0 Augmented Reality (AR) Try-On Test Script	
Date	September 09, 2025
Tested by	Veeny Ree Mae Bautista
Test Case Number	002
Test Case Name	Augmented Reality (AR) Try-On
Test Case Description	This allows the user to try on shoes virtually using an augmented reality (AR) website.
Item(s) to be tested	
1 2 3 4 5 6 7	Try AR Now Switch Camera Running-White Running-Red Running-Black Running-Blue Basketball-White

8	Basketball-Black
9	Basketball-Red
10	Basketball-Blue
11	Close Button

Procedural Steps	
1	Click Try AR Now Button
2	Click Switch Camera
3	Click Running-White
4	Click Running-Red
5	Click Running-Black
6	Click Running-Blue
7	Click Basketball-White
8	Click Basketball-Black
9	Click Basketball-Red
10	Click Basketball-Blue
11	Click Close Button

Specifications			
Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
Try AR Now	When the Try AR Now button is clicked, the user redirect to the DeepAR website.	Y	The user directed to the DeepAR website
Switch Camera	When the Switch Camera button is clicked, the user should switch the camera view (e.g., from front-facing to rear-facing or vice-versa).	Y	The user switches the camera view neither front nor rear view

Running-White	If the Running-White toggle switch button is clicked, the running-white effect should be enabled.	Y	The running-white effect was enabled and ready to view.
Running-Red	If the Running-Red toggle switch button is clicked, the running-red effect should be enabled.	Y	The running-red effect were enabled and ready to view.
Running-Black	If the Running-Black toggle switch button is clicked, the running-black effect should be enabled.	Y	The running-black effect was enabled and ready to view.
Running-Blue	If the Running-Blue toggle switch button is clicked, the running-blue effect should be enabled.	Y	The running-blue effect was enabled and ready to view.
Basketball-White	If the Basketball-White toggle switch button is clicked, the basketball-white effect should be enabled.	Y	The basketball-white effect was enabled and ready to view.
Basketball-Black	If the Basketball-Black toggle switch button is clicked, the basketball-black effect should be enabled	Y	The basketball-black effect was enabled and ready to view.
Basketball-Red	If the Basketball-Red toggle switch button is clicked, the basketball-red effect should be enabled	Y	The basketball-red effect was enabled and ready to view.
Basketball-Blue	If the Basketball-Blue toggle switch button is clicked, the basketball-blue effect should be enabled	Y	The basketball-blue effect was enabled and ready to view.
Close Button	After picking an effect and the Close button is clicked, the effect is ready to view.	Y	The user has viewed the effect.

Table 7.0 shows the test script for Augmented Reality Feature. As expected,

the Augmented Reality (AR) Try-On buttons were tested and successfully passed

the expected result. The customers were able to enable a variety of specific using their respective toggle switches, including all running and basketball effects. After an effect is chosen, clicking the close button successfully prepares the effect for viewing.

Table 8.0 Customization Test Script	
Date	September 09, 2025
Tested by	Marc Steeven Parubrub
Test Case Number	003
Test Case Name	Customization
Test Case Description	This allows the user to customize the available model in their own preference.
Item(s) to be tested	
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Customize Shoes Classic Sneaker under Available Model Performance Runner under Available Model High-Top Basketball under Available Model Customize Selected Model Button Shoe Sizes Body Color Standard Button under Laces Flat Button under Laces Elastic Button under Laces Laces Color Foam Button under Insole/Shoe Pad Gel Button under Insole/Shoe Pad Memory Foam under Insole/Shoe Pad Shoe Parts Button Size Reference Button Save Design Button Buy Now Button

19	Payment Method Radio Button
20	Edit Design Button
21	Confirm Order Button

Procedural Steps	
1	Click the Navigation Bar "Customize Shoes"
2	Click Classic Sneaker Button
3	Click Performance Runner Button
4	Click High-Top Basketball Button
5	Click Customize Selected Model Button
6	Click available Shoe Size
7	Click available Body Color
8	Click Standard Button under Laces
9	Click Flat Button under Laces
10	Click Elastic Button under Laces
11	Click available Laces Color
12	Click Foam Button under Insole/Shoe Pad
13	Click Gel Button under Insole/Shoe Pad
14	Click Memory Foam under Insole/Shoe Pad
15	Click Shoe Parts Button
16	Click Size Reference Button
17	Click Save Design Button
18	Click Buy Now Button
19	Click Edit Design Button
20	Click Confirm Order Button

Specifications			
Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
Customize Shoes	When the Customize Shoes is clicked, the user should redirect to the Select your Shoe Model Page	Y	User directed Select your Shoe Model Page
Classic Sneaker	If the Classic Sneaker button is clicked, it should be selected, and the user is ready to customize the shoe.	Y	Classic Sneaker is selected
Performance Runner	If the Performance Runner button is clicked, it should be selected, and the user is ready to customize the shoe.	Y	Performance Runner is selected
High-Top Basketball	If the High-Top Basketball is clicked, it should be selected, and the user is ready to customize the shoe.	Y	High-Top Basketball is selected
Customize Selected Model Button	After the user selects one of the available models and the Customize Selected Model button is clicked, it should take the user to the Customization page.	Y	User was taken to the customization page
Shoe Size	When the user clicks any Shoe Size (5-15), that size is selected, and saved as the confirmed size for the order.	Y	Selected shoe size is saved
Body Color	When the user clicks a Body Color (White, Black, Blue, or Red), that color is selected, and saved as the primary body color for the shoe.	Y	Selected body color is saved
Standard Button	If the Standard option is clicked, Standard is instantly selected, and no additional price is added to the total cost.	Y	Standard is selected as the lace

Flat Button	If the Flat option is clicked, Flat is instantly selected and the price of +P150 is added to the total cost.	Y	Flat is selected as the lace
Elastic Button	If the Elastic option is clicked, Elastic is instantly selected and the price of +P200 is added to the total cost.	Y	Elastic is selected as the lace
Laces Color	When the user clicks a Laces Color (White, Black, Gray, Red, Green), that color is selected, and saved as the color for the lace style.	Y	Selected laces color has saved
Foam Button	If the Foam option is clicked, Foam is instantly selected, and no additional price is added to the total cost.	Y	Foam is selected as the Insole/Shoe Pad
Gel Button	If the Gel option is clicked, Gel is instantly selected and the price of +P150 is added to the total cost.	Y	Gel is selected as the Insole/Shoe Pad
Memory Foam Button	If the Memory Foam option is clicked, Memory Foam is instantly selected and the price of +P200 is added to the total cost	Y	Memory Foam is selected as the Insole/Shoe Pad
Shoe Parts Button	When the Shoe Parts button is clicked, the modal window is displayed that provides information for shoe components. If the Close button is clicked, the user should return to the customization page.	Y Y	Shoe information was displayed Return to the customization page
Size Reference Button	When the Size Reference button is clicked, the modal window is displayed that shows a conversion table for US, EU, and UK sizes along with the foot length in cm.	Y	Display the Size Chart

	If the Close button is clicked, the user should return to the customization page.	Y	Return to the customization page
Save Design Button	When the Save Design button is clicked, the system prompts a confirmation.	Y	Confirmation
	If the OK button is clicked, the design progress should be saved.	Y	Design progress was saved.
Buy Now Button	When the Buy Now button is clicked, the system prompts a confirmation of your order.	Y	Confirmation of the user's order has appeared
	If the OK button is clicked, the user should redirect to the checkout custom design page.	Y	The user directed to the checkout page.
Edit Design Button	When the Edit Design button is clicked, the user is navigated back to the customization page to edit their design.	Y	The user has return to the customization page.
Confirm Order Button	When the Confirm Order button is clicked, the order is submitted and displays the user order details.	Y	Shosws the order details of the user.

Table 8.0 exhibits the test script for Customization. The customization features were tested and successfully passed the expected result. The customers are able to select an available model of shoe to customize, including specifying the shoe size, selecting a body color, choosing a different laces option and a laces color, and selecting available insole/shoe pad. Furthermore, the system clearly shows the financial breakdown and total cost of the customized shoe, including a 12% VAT. Customers can either save the design or proceed to buy it now.

Table 9.0 Ordering Module Test Script	
Date	September 09, 2025
Tested by	Leander Ochea
Test Case Number	004
Test Case Name	Ordering Module
Test Case Description	This allows the user to easily place their order.

Item(s) to be tested	
1 2 3	Add to Cart Button Buy Now Button Place Order Button

Procedural Steps	
1	Click Add to Cart Button
2	Click Buy Now Button
3	Click Place Order Button

Specifications			
Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
Add to Cart Button	When the Add to Cart button is clicked, the system prompt a notification that the item was successfully added to the cart.	Y	Notification appears
	If the "OK" button is clicked, it should redirect to the ordering module.	Y	Redirect to ordering module

Buy Now Button	If the Buy Now button is clicked, it should redirect to the checkout page where the customer can confirm their shipping information and payment method.	Y	Checkout Page
Place Order Button	If the Place Order button is clicked, the order confirmation should appear.	Y	Order Confirmation has appeared
	If the Close(X) button is clicked, the user should be taken back to the previous page.	Y	User has return to the previous page
	If the Continue Shopping button is clicked, the order is confirmed, and the user should be redirected to the dashboard.	Y	Order Confirmed

Table 9.0 displays the Ordering Module Test Script. In this form, the Add to cart, Buy now, and Place order button were tested and successfully met the expected result. The Add to cart button, Buy now button, and Place order button got its expected result and executed its proper function.

Table 10. Tracking System Test Script	
Date	September 09, 2025
Tested by	Veeny Ree Mae Bautista
Test Case Number	005
Test Case Name	Tracking System
Test Case Description	This allows the user to track the status of their orders, while also allowing shop owners and employees to update delivery progress.

Item(s) to be tested	
1	My Order
2	Track Package Button
Procedural Steps	
1	Click My Order
2	Click Track Package Button
Specifications	

Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
My Order	When the My Order is clicked, the My Order Page has appeared.	Y	My order page appeared
Track Package Button	If the Track Package is clicked, the user can monitor the status of their purchases in real time.	Y	The user can monitor the status of their package

Table 10 represents the Tracking System Test Script. As expected, the My Order and Track Package buttons were tested and successfully passed the test. Both buttons functioned properly and produced the expected results.

Table 11. AI-Powered Chatbot Support Test Script	
Date	September 09, 2025
Tested by	Leander Ochea
Test Case Number	006
Test Case Name	AI-Powered Chatbot Support

Test Case Description	This allows the user to access the AI-powered customer support for instant assistance with their inquiries.
Item(s) to be tested	
1 2	Chatbot Send Button
Procedural Steps	
1	Click the Navigation Bar "Chatbot" Input your questions or inquiries
2	Click the Send Button
Specifications	

Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
Chatbot	When the Chatbot is clicked, the system prompts the user to the Chatbot Assistant Page	Y	Chatbot assistant page appeared
Send Button	When the Send button is clicked, the system sends the user's questions or inquiries to the API then prompt a response.	Y	The user can send questions or inquiries

Table 11 displays the test script for AI-Powered Chatbot Support. In this form, the Chatbot and Send button were tested and successfully passed the test. Both buttons executed properly and met their expected result.

Table 12. Feedback System Test Script	
Date	September 09, 2025
Tested by	Armabel Ramos
Test Case Number	007
Test Case Name	Feedback System
Test Case Description	This allows the user to submit ratings and reviews to the product they have purchased.
Item(s) to be tested	
1 2 3 4	Order History Leave Review Button Submit Feedback Button Edit Review Button
Procedural Steps	
1	Click the Navigation Bar "Order History"
2	Click Leave Review Button
3	Click Submit Feedback Button
4	Edit Review Button
Specifications	

Input	Expected Output/ Result	Pass Y/N	Actual Result/Output
Order History	If the Order History is clicked, the system prompts the user into the Order History Page.	Y	The user directed to order history page
Leave Review Button	When the Leave Review button is clicked, the Ratings & Review Form should appear.	Y	Ratings & Review Form appear.

Submit Feedback Button	When the Submit Feedback button is clicked, the system prompts a warning message if the user enters inappropriate feedback.	Y	A warning message has appeared
	The warning message prompts the user to revise the feedback they have entered. If the user then clicks the OK button, they were taken back to the feedback form.	Y	The user can revise their feedback
	After revising the feedback, and if the Submit Feedback button is clicked again, the feedback was saved.	Y	Feedback has been saved
Edit Review Button	When the Edit Review button is clicked, the user should be able to revise their previously submitted review.	Y	The user can edit the review

Table 12 shows the Feedback System test script. As presented, the Order history, Leave review, Submit feedback, and Edit review buttons were tested and succesfully passed the test. All four buttons executed their proper function and delivered the expected results.

Project Evaluation

This section demonstrates the assessment processes and outcomes that were applied in the measurement of the developed system's success. The respondents of the study consisted of five (5) owners of shoe retail shops, ten (10) employees, thirty (30) customers, and fifty-eight (58) students. The evaluation was conducted through establishing the system, administering survey forms to the respondents, demonstrating the features and the flow of the system, and giving the respondents an opportunity to test the system according to the ISO 25010

requirements. The respondents also filled out the survey forms after the testing to see how the system was performing. Then, the researchers gathered the survey forms, analyzed the data acquired, and calculated the outcomes through a weighted formula. The interpretation of the overall scores was done through the numerical range and corresponding descriptive interpretation according to the Likert scale.

Table 13. *Evaluation of Software Quality: Functional Suitability*

Functional Suitability	Mean Rating	Description Interpretation
A. Functional Completeness	4.66	Excellent
B. Functional Correctness	4.67	Excellent
C. Functional Appropriateness	4.73	Excellent
MEAN	4.69	Excellent

Table 13 indicates the analysis of the system regarding functional suitability. The system received an average rating of 4.69 and the descriptive meaning of Excellent. This means that the system can be very much able to handle its intended purposes. Respondents state that the developed system executes its functions fully, properly, and suitably. They emphasized on the effectiveness of customization of the product process, the correctness of the integration of the augmented reality, and the suitability of the AI support in guiding the customers through the system. Overall, the respondents were pleased with the manner in which the system met its required basic functional characteristics.

Table 14. *Evaluation of Software Quality: Reliability*

Reliability	Mean Rating	Description Interpretation
A. Maturity	4.57	Excellent
B. Availability	4.67	Excellent
C. Fault Tolerance	4.59	Excellent
D. Recoverability	4.61	Excellent
MEAN	4.61	Excellent

Table 14 represents the system reliability assessment. The overall average for the system reliability assessment score was 4.61 or Excellent. The customers found the SmartFit platform to be very smooth in operation, always accessible and always functioning as expected through testing. They also valued the ability of the system to perform well under load conditions where multiple individuals would access the system at the same time; they felt confident that if the system went down, the back-up systems would ensure that critical data would be preserved and therefore would continue to provide reliable service.

Table 15. *Evaluation of Software Quality: Compatibility*

Compatibility	Mean Rating	Description Interpretation
A. Co-existence	4.64	Excellent
B. Interoperability	4.67	Excellent
MEAN	4.66	Excellent

Table 15 shows the assessment of the system regarding Compatibility. The system achieved an average score of 4.66, which considered Excellent. The

respondents stated that the system can be used across various devices and Web Browsers; however, it was an important factor when using certain functions such as AR try-on (which has been limited to use only on mobile devices via Web Assembly and WebGL). The respondents further stated that the systems flexibility to operate under many different conditions and environments without conflict was beneficial to both its availability and usability. Additionally, the systems interoperability ensures ease of communication between modules as well as an improvement to the user's experience.

Table 16. *Evaluation of Software Quality: Usability*

Usability	Mean Rating	Description Interpretation
A. Appropriateness Recognizability	4.68	Excellent
B. Learnability	4.67	Excellent
C. Operability	4.66	Excellent
D. User Error Protection	4.64	Excellent
E. User Interface Aesthetics	4.71	Excellent
F. Accessibility	4.60	Excellent
MEAN	4.66	Excellent

Table 16 shows the usability assessment of the system. The system obtained a total average score of 4.66, therefore classified under Excellent. The users expressed their overall satisfaction with the system's User Interface Design, and described it as: "Very Attractive", "User-Friendly", "Easy to Use". The users were also pleased with the functionality of each of the systems' features, the ease at which they could customize and the effectiveness of the AI assistant in guiding

them through the process. The users were also noted for its ability to minimize user errors and facilitate quick learning, thus making it a highly user-friendly platform.

Table 17. *Evaluation of Software Quality: Performance Efficiency*

Performance Efficiency	Mean Rating	Description Interpretation
A. Time Behavior	4.67	Excellent
B. Resource Utilization	4.58	Excellent
C. Capacity	4.55	Excellent
MEAN	4.60	Excellent

Table 17 shows the performance efficiency rating of the system. It received a mean score of 4.60, which classified as Excellent. Users commented that they appreciated the systems rapid response times and how it efficiently utilized available resources. In addition to these positive comments, users felt that the system performed very well with respect to data management in the course of the email verification process, and in processing requests initiated through the use of AI, whether one or multiple users were accessing the system at the same time. Overall, the system had a high degree of capability and efficiency, exceeded user's performance expectations, and met their needs related to system performance.

Table 18. *Evaluation of Software Quality: Security*

Security	Mean Rating	Description Interpretation
A. Confidential	4.73	Excellent
B. Integrity	4.70	Excellent
C. Non-repudiation	4.64	Excellent
D. Accountability	4.56	Excellent
E. Authenticity	4.65	Excellent
MEAN	4.66	Excellent

Table 18 outlines the security testing results of the system. The system was rated at an average of 4.66, which considered Excellent. Users appreciated the security features of the system including the protection of personal information in the system, data integrity and the authentication process. Users specifically mentioned that once they completed the registration, they received a confirmation email to confirm their email address before being able to access the dashboard. In addition, users said they had assurance of the systems accountability and non-repudiation features to provide them with the necessary confidence when making transactions on the system. In total, users stated that they had complete confidence in the protection of their communication and data as it related to the system.

Table 19. *Evaluation of Software Quality: Maintainability*

Maintainability	Mean Rating	Description Interpretation
A. Modularity	4.61	Excellent
B. Reusability	4.54	Excellent
C. Analyzability	4.58	Excellent
D. Modifiability	4.58	Excellent
E. Testability	4.63	Excellent
MEAN	4.59	Excellent

Table 19 presents the analysis of the system regarding its maintainability. The average score of the system was 4.59, which corresponds to Excellent. Respondents indicated that SmartFit was well designed and could be easily changed or adapted for future improvements. The modularity and retake-ability of the system were made a point of, which made testing and updating easy. The user's appreciation of the fact that there was the option of basic customization of their selections, and that the control of the chatbot assistant was easy, were features which added to the maintainability of the system and made it suitable for extended use.

Table 20. *Evaluation of Software Quality: Portability*

Portability	Mean Rating	Description Interpretation
A. Adaptability	4.68	Excellent
B. Installability	4.58	Excellent
C. Replaceability	4.58	Excellent
MEAN	4.61	Excellent

Table 20 gives a detailed evaluation of the system in terms of portability. The system recorded a mean score of 4.61, which considered Excellent. The respondents stated that the system can be easily adjusted for use in different environments and devices without difficulty, they were all familiar with the suggested browsers which may be used. There was also much praise for the simplicity of the installation of the system, and the facility with which the system can be altered or modified. Another point of praise was the support of semi-realistic interaction using the system, as well as a semi-live visualisation of the shoe in question, its basic styles, colours, and designs. It was this latter point which confirmed that the system was yet very portable and could perform in similar technical environments.

Chapter 5

**SUMMARY OF FINDINGS, CONCLUSIONS, AND
RECOMMENDATIONS**

This chapter includes discussion of summarized results of the different tests, conclusions made based on the results of the survey, and future suggestions as to how to further improve the system.

Summary of Findings

Based on the analysis of data and evaluation results, the findings are as follows:

1. On the result of the evaluation of SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

    1.1. The Functional Stability characteristics got a mean rating of 4.69 with the descriptive interpretation of Excellent. This means that the system can be very much able to handle its intended purposes. Respondents state that the developed system executes its functions fully, properly, and suitably. They emphasized the effectiveness of the customization of the product process, the correctness of the integration of the augmented reality, and the suitability of the AI support in guiding the customers through the system. Overall, the respondents were pleased with the manner in which the system met its required basic functional characteristics.

    1.2. The Performance Efficiency characteristic got a mean rating of 4.6 with the descriptive interpretation of Excellent. Users commented

that they appreciated the systems rapid response times and how it efficiently utilized available resources. In addition to these positive comments, users felt that the system performed very well with respect to data management in the course of the email verification process, and in processing requests initiated through the use of AI, whether one or multiple users were accessing the system at the same time. Overall, the system had a high degree of capability and efficiency, exceeded user's performance expectations, and met their needs related to system performance.

1.3. The Compatibility characteristic got a mean rating of 4.66 with the descriptive interpretation of Excellent. The respondents stated that the system can be used across various devices and Web Browsers; however, it was an important factor when using certain functions such as AR try-on (which has been limited to use only on mobile devices via Web Assembly and WebGL). The respondents further stated that the systems flexibility to operate under many different conditions and environments without conflict was beneficial to both its availability and usability. Additionally, the systems interoperability ensures ease of communication between modules as well as an improvement to the user's experience.

1.4. The Usability characteristic obtained a total average score of 4.66, therefore it's classified under Excellent. The users expressed their overall satisfaction with the system's User Interface Design, and

described it as: "Very Attractive", "User-Friendly", "Easy to Use". The users were also pleased with the functionality of each of the systems' features, the ease at which they could customize and the effectiveness of the AI assistant in guiding them through the process. The users were also noted for its ability to minimize user errors and facilitate quick learning, thus making it a highly user-friendly platform. also noted for its ability to minimize user errors and facilitate quick learning, thus making it a highly user-friendly platform.

1.5.   The overall average for the system reliability assessment score was 4.61 or Excellent. The users found the SmartFit platform to be very smooth in operation, always accessible and always functioning as expected through testing. They also valued the ability of the system to perform well under load conditions where multiple individuals would access the system at the same time; they felt confident that if the system went down, the back-up systems would ensure that critical data would be preserved and therefore would continue to provide reliable service.

1.6.   The Security characteristic got a mean rating of 4.66 with the descriptive interpretation of Excellent. Users appreciated the security features of the system including the protection of personal information in the system, data integrity and the authentication process. Users specifically mentioned that once they completed the registration, they received a confirmation email to confirm their email

address before being able to access the dashboard. In addition, users said they had assurance of the systems accountability and non-repudiation features to provide them with the necessary confidence when making transactions on the system. In total, users stated that they had complete confidence in the protection of their communication and data as it related to the system.

1.7. The Maintainability characteristic got a mean rating of 4.59 with the descriptive interpretation of Excellent. Respondents indicated that SmartFit was well designed and could be easily changed or adapted for future improvements. The modularity and retake-ability of the system were made a point of, which made testing and updating easy. The user's appreciation of the fact that there was the option of basic customization of their selections, and that the control of the chatbot assistant was easy, were features which added to the maintainability of the system and made it suitable for extended use.

1.8. The Portability characteristics got a mean rating of 4.66 with the descriptive interpretation of Excellent. The respondents stated that the system can be easily adjusted for use in different environments and devices without difficulty, they were all familiar with the suggested browsers which may be used. There was also much praise for the simplicity of the installation of the system, and the facility with which the system can be altered or modified. Another point of praise was the support of semi-realistic interaction using the

system, as well as a semi-live visualisation of the shoe in question, its basic styles, colours, and designs. It was this latter point which confirmed that the system was yet very portable and could perform in similar technical environments.

Conclusion

1. SmartFit: An Augmented Reality-Integrated Footwear Retail and Customization Portal With AI-Powered Assistance was developed to give customers a new opportunity to order shoes online. This system enables customers to use a virtual fitting to try shoes on, design them in accordance with their styles and preferences, and receive assistance with an AI-powered chatbot. Users can create and manage accounts, and the system has secure verification to conduct safe transactions. It also allows the shop owners and employees to keep track of inventory, take orders, and update the availability of products. Also, the augmented reality feature allows the customers to preview shoes prior to purchase, and the AI-powered chatbot was responsible for answering customers' inquiries. Sales, inventory, and feedback of the shop can be analyzed and generated reports. Also, the system enables customers to make orders, monitor purchases, customize shoes, and leave ratings and reviews. Lastly, the system administrator was responsible for validating shoe products and shop owner accounts. The admin also maintains the AI chatbot, custom order management, and feedback checking to eliminate inappropriate language.

2. SmartFit: An Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance was built on Java EE (Jakarta EE) as the backend development framework, DeepSeek for the augmented reality feature, and Firebase as the database and runs on Windows 10 or 11. Hardware requirements include a desktop, laptop, printer, router, and a mobile device.

3. SmartFit: An Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance was tested and enhanced with regard to usability, performance, efficiency, and reliability. The system achieved the anticipated outcome and succeeded. the specifications following its testing using the determined criteria of evaluation and test script forms.

4. SmartFit: An Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance was evaluated using ISO 25010 that follows the following criteria: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. It received an overall mean rating of 4.64 with an interpretation of "Excellent".

Recommendations

Based on the foregoing conclusions, the following are recommended for the further improvement of the project:

1. To implement SMS or push notifications for order updates, promotions, and system alerts.

2. To integrate API connection for digital payment gateways.

3. To provide multi-currency support for digital payments.

4. To adopt phased implementation by initially focusing on core features, such as AI-powered sizing recommendations from SafeSize, Perfitt, and mySHOEFITTER, then expanding AR virtual try-on and full customization.

5. To explore partnerships with Augmented Reality (AR) or Artificial Intelligence (AI) technology providers.

6. To pursue partnerships with multiple shoemakers to expand the product availability.

7. To incorporate multi-language support for worldwide growth potential and in order to help the non-native speakers to use the service easily.

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APPENDIX A
Title Proposal

Project Title: SmartFit: A Proposed Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

Summary

For a long time, the footwear industry has been an essential part of everyday life along with general commerce. It was not only shoe performance that matters to the consumers, but also styles, comfort and uniqueness of such. Consumers in the past had to visit stores personally to try on many styles of shoes, choose from the limited selections that had been made available. This was slower, a bit tougher for the consumers and more difficult for shop owners to provide good customer service and stock control of their shoes and, they could not keep a proper record of their sales. With the change and volcanic emergence of digital technologies, notably Augmented Reality (AR) and Artificial Intelligence (AI), the whole retail industry has changed. Now customers can use new AR technology to "see" shoes in relationship to themselves before they buy and AI can quickly answer customer's questions and provide assistance. The system proposes a new technology for the web that includes AR for virtual try-on, a portal to customize personalized footwear designs, and AI to assist and guide the user. The goal of the platform was to be functional for customer and shop owners as it provides a seamless, interactive, functional experience in being a customer and managing a business.

Project Background

Footwear retail is one of the most competitive sectors of the fashion industry as companies always innovate to keep up with the requirements of the different

types of consumer preferences. Traditionally, shoe businesses depend on manual processes for inventory, handling orders, and interacting with customers, which often results in inefficiencies within the systems. Customers, on the other hand, also suffer from little engagement in conventional shopping environments because, in order to try on footwear, it's totally dependent on the stock available physically. The used of digital platform in retail has created new possibilities. Online stores can track how customers look at and purchase products over the internet, but they often struggle to replicate the experience of try-on process in person or offering advanced customization. By incorporating augmented reality with AI functionalities, the developed system solves these limitations by giving customers the opprutunity to visualize their shoes and render them in a customizable way and providing shop owners with digital tools a sufficient means of running their businesses.

Current State Technology

The way in which goods are bought and exchanged with businesses has been altered forever by modern technology. Augmented reality changed by supplying users with immersive experiences in which they can interact with the brand in the real world with digital models of the merchandise. AI changed customer interaction as well by employing chatbots for improved interaction. These innovations make the process of returns lower, customer satisfaction increases, and decision-making was simplified. The modern database management systems, cloud storage, and online platforms have made sure that inventory, customer data, and business operations are handled efficiently. However, challenges still remain

in ensuring AR detection in front of users, security of the systems, and user privacy. As the footwear industry undergoes digital transformation, solutions such as SmartFit are gaining traction as one of the most relevant ways to close the knowledge gap between physical retail and shopping online.

Project Problem Statement

The main challenge of this study was to design and implement a web-based system using Augmented Reality together with AI chatbot assistance of the footwear industry. The study aimed to provide an answers to the following questions: How do the users register on the platform? How do the shop owners and employees maintain the stock of shoes in the product catalog? How do the customers try on shoes? How does the system handle customization options for shoes and provide cost estimates? How do the customers place their orders? How do the customers track the status of their orders? How does AI-driven customer support assist customers with their inquiries? How can the feedback and ratings be collected and managed? How report generation implemented within the system?

Project Assumption

Managing the retail operations of footwear and improving the shopping experience of customers: SmartFit: An Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance. Its primary goal was to enable the efficient management of inventory, orders and customer relations by shop owners and employees, whilst enabling customers to virtually try on shoes

and customize their own designs, along with an AI capability to assist customers. The ultimate goal of this system was to simplify shoe retail operations, improve customer satisfaction, and provide an innovative platform that makes the bridge between physical and online shopping easier.

The following are the major capabilities of the system:

- Allowing all users to register through the registration module;

- Providing shop owners and add employees with an inventory management module to update stock levels and manage the product catalog through inventory module;

- Enabling customers to access augmented reality mobile app that let them try on the shoes virtually;

- Offering a basic customization option for shoes that allows customers to personalize their selections and receive cost estimates through the customization module;

- Facilitating customers to place shoe orders easily through the ordering module;

- Implementing a tracking system that allows customers to monitor the status of their shoe orders in real time;

- Integrating AI-driven customer support to assist customers with their inquiries;

- Establishing a feedback system where users can submit ratings and reviews; and

- Creating a report generation to collect data from the system for easy report creation.

Proponents:

Bautista, Veeny Ree Mae R.

Ochea, Leander P.

Parubrub, Marc Steeven B.

Ramos, Armabel N.

Approved by:

RODA A. PANGILINAN, PhD

Adviser, NW4A

CHERRY A. COLLERA, PhD

Adviser, NW4B

ARLYNE M. NAOE, MEM

Adviser, NW4C

JHANICE L. DE JESUS, MIS

Adviser, NW4D

ERWIN Y. OLIVERIA, MIT

Adviser, NW4E

APPENDIX B
Adviser's Commitment

**STUDENTS' AND ADVISER
THESIS COMMITMENT and AGREEMENT**

This agreement is binding the Student/s and their thesis adviser for the duration and completion of their research project. As an agreement, the following will be expected from both parties:

- Student/s is/are expected to put his/their work into their thesis.
- Faculty advisers are expected to guide students to produce their best work.
- Both jobs are time-consuming and must be carried out by students and faculty members working together in a disciplined way over a sustained period.
- Both parties have the responsibility to see the necessary work is completed on time. A clear schedule should be made and agreed by both parties for their meetings to supervise the progressive elaboration of the research project.

Whereas, the thesis adviser is expected to perform the following duties:

- The thesis adviser is expected to mentor the students throughout the project development by providing guidance for the preparation and completion of the project.
- Periodic meetings and performance reviews are expected to be given out by the thesis adviser to their advisee/s to monitor the status of the research project.
- The thesis adviser shall be the source of encouragement and support for the students to ensure that the objectives of the system will be achieved.

  The signature below indicates that both parties agree to the duties and responsibilities set forth as stipulated in the Thesis/Research Methodology Manual.

Project Title: Smartfit: Augmented Reality-Integrated Footwear Retail And Customization Portal With AI-Powered Assistance

Course/Section: Bachelor of Science in Information Technology

NW4B

Advisee's Full Name Signature/s/Date	Adviser's Full Name Signature/Date
Veeny Ree Mae Bautista	Cherry A. Collera, PhD
Leander Ochea	
Marc Steeven Parubrub	
Armabel Ramos	

APPENDIX C

Milestone Contact and Checklist

Thesis Milestone Contract and Checklist

This contract is authorized in the Regulations for four-year BS Information Technology, BS Computer Science and BS Entertainment and Multimedia Computing. The student shall submit this contract for approval at the college responsible for the thesis in accordance with the deadlines stipulated. Any changes to the contract during its duration (e.g. syllabus, adviser, leave of absence/extension, etc.) should be processed by the college.

1. **Student Details** (Last Name, First Name, Middle Initial)

   Member 1: <u>BAUTISTA, Veeny Ree Mae R.</u>
   Member 2: <u>OCHEA, Leander P.</u>
   Member 3: <u>PARUBRUB, Marc Steeven B.</u>
   Member 4: <u>RAMOS, Armabel N.</u>

2. **Adviser(s)**
State the name of the principal adviser and any co-adviser(s) or external adviser(s). The principal adviser has the overall responsibility {for following 'up the contract on behalf of the college and ensuring the student receives academic supervision for the entire duration of the contract. The student has the right to receive academic supervision during the period he/she shall work on their undergraduate thesis (in accordance with the programme description). If the adviser plans to have a sabbatical during the duration of the contract, "the student should be informed of this at the time of entering into the contract.

Principal adviser: **Office address / Phone / E-mail:**

Co-/external adviser:

3. **THESIS PROJECT**
a) **Working Title:** <u>Smartfit: Augmented Reality-Integrated Footwear Retail And Customization Portal With AI-Powered Assistance</u>

The copy of the approved Title Proposal should be attached. It should include:
☐ Research Problems   ☐ Objectives
☐ Methodology   ☐ Schedule/timetable   ☐ Technical/scientific partners (if any)

b) **Implementation of Thesis Project:**
Each group member takes responsibility for the project's objectives. All students are entitled to implement their theses on a group basis which will consist of 2-4 members. However, 5 members will be permitted if the class population exceeded the grouping requirements.

   Group project with <u>4</u> members

c) **Timetable for Thesis Project:**
   ☐ Date of Approval – Title Defense   _____
   ☐ Date of Approval – Proposal Defense   _____
   ☐ Date of Approval – Final Defense   _____
   ☐ Date of Book Submission   _____

d) **Planned Progress:**	☐ Full-time student (100%)

For part-time students, the academic progress must constitute a minimum __%. Undergraduate theses of 30 credits should normally be implemented on a full-time basis. Students who have engagements as part-time lab assistants and equivalent may apply for the length of study to be adjusted	☐ Part-time student ___%

4. REQUIREMENTS FOR EQUIPMENTS/RESOURCES
In the event that resources at an external institution shall be used, this must be specified in point 6 b)

a) The student's place of work (office/lab):

b) Requirements for equipment/resources

Will, there be a requirement for (any of) the following resources during the thesis project:

Access to/purchase of equipment or software	**Please specify:**
Access to systems	**Please specify:**
Access to background information and data(set)	**Please specify:**

Expenses (if any):

Approved by the person responsible for resources at the college:

Approved by the person responsible for resources at the external institution:

5. NOTES

6. SIGNATURES
The student, principal adviser, other advisers, and college dean have reached agreements concerning all points covered in the contract.

Student/Date: Marc Stephen Parubrub   Principal Adviser/Date: Cherry Collera, PhD

Co-/External Adviser/Date: Co-/External Adviser/Date:

College Dean:

APPENDIX D
Letter of Intent

March 28, 2025
Maria Wilmer M. Bonaobra
Founder & Owner
81 Points Sports Apparel Pro Shop
Blue ridge, Doña Maria Subdivision, Balanga, Bataan

Dear Ma'am:

Greetings!

The 3rd year students of Bachelor of Science in Information Technology major in Network and Web Application are currently enrolled in Capstone Project 1 course (ITCC1323). The final requirement of this course is to create an Augmented Reality Try on Shoes.

Since students were advised to identify a company that will need improvement in its current system, they have selected 81 Points Sports Apparel Pro Shop to serve as a client in the development of an **SmartFit: A Proposed Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance for 81 Points.**

In this view, the proponents respectfully request permission from your good office to allow them to conduct data gathering to determine the processes that are vital to the system. After system development, users from your company will serve as respondents during the system testing and evaluation. If you decide to use the finished project, the two (2) parties (81 Points and BPSU) may sign a Memorandum of Agreement.

We are looking forward to working with you in the coming days. We are hoping that we can be partners for this endeavor.

Thank you very much and more power!

Very truly yours,

Bautista, Veeny Ree Mae R.

Ramos, Anirabel N.

Parubrub, Marc Steeven B.

Ochea, Leander P.

Endorsed by:
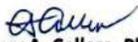
Cherry A. Collera, PhD
ITCC1323 Instructor

Noted by:

Approved by:

Maria Lolita G. Masangcap, DIT
Dean, CCST

Maria Wilmer M. Bonaobra
Founder & Owner

APPENDIX E
Transript of Interview

Title of the Study: SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance for 81 Points

Date and Time: March 13, 2025, at 7:00 PM

Venue: Blue Ridge, Doña Maria Subdivision, Balanga, Bataan

Interviewer: What is your name?

Respondent: Hello, I'm Maria Wilmer M. Bonaobra

Interviewer: When was 81 Points established?

Respondent: Hindi na katulad ng dati na 3-4 items per day kami sa shoes. Tapos sabi ko sa husband ko, sige gawa na lang kita ng page sa Facebook para may back up tayo. Ginawa namin yung page around 2021 na. Medyo hindi na siya pandemic e. 2021 na. So doon na kami nag-start tapos yung sa Shopee naman around 2023 or 2024? Last year? Last year siguro. Tinax-san naman na yung Shopee. Nagtax na yung BIR sa Shopee. Hindi na din talaga ano sa amin. Kaya clinose niya na yung Shopee niya.

Respondent: Ang nangyari naman, nag-renovate kami ng bahay. Sinabay na namin, tinayo yung physical store kasi nga mahirap mag rent sa labas, mahal wala rin masyadong mag-aasikaso So ito, anytime lang na pwede kami, may pumupunta din naman.

Respondent: So ayon, doon din kami nakabawi. Actually ngayon, ah last year parang mga ber months. Grabe talaga yung nag wa-walk in. Family talaga lahat silang member bibili ng shoes ganon. Shopping talaga sila. So yun, doon lang kami medjo nakabawi.

Interviewer: What inspired you to start this business?

Respondent: Si husband, hindi naman kasi sila mayaman. Wala sila masyadong pambili ng ano. Eh, mahilig siya sa shoes. So, nag-after niyang mag-graduate ng nursing, nag-abroad siya. Nag-Saudi siya. So, pagkakasal namin, nagsaudi agad siya. Doon siya, namimili ng mga shoes niya kasi mura doon ng mga sale. Tapos, iuwi niya dito, ipapa-box niya, tapos papabenta niya isa-isa ganon. Hanggang sa noong medyo malapit na siyang umuwi kasi after 2 years ng tapos ng contract niya pinauwi ko na nung umuwi na siya noon. Ayun na, may mga dalang na siyang mga sapatos na mga sale galing doon; doon na kami nag-start mabenta, tapos yung mga na-collect niyang item na medyo rare binenta niya na rin, tapos nung nag-apply na siya rito sa BGH, sinabay niya na. Yun nga, parang paunti-unti pa dami nang padami yung stocks niya. So yung bahay namin

puro stocks na yun ng sapatos. Minsan yung buong kwarto puro sapatos niya na lang.

Interviewer: Who is the founder, and what is their background in the footwear or retail industry?

Respondent: Founder siya lang din. Si husband lang talaga. Siya lang lahat. Pati yung stocks kung saan niya kukunin. Minsan kasi pag rare, nagstart kasi siya Jordan. Jordan na collectibles. So, usually pag naglalabas ng Jordan na pair. Diba limited lang? So, unahan yung mga reseller. Pag may naghanap sa kanyang Jordan na medyo rare na wala siya, sa reseller lang din siya co-collect. Basta legit lang yung mga kinukuhanan niya. Wala naman problema. Parang alam din naman kasi ng mga nagcocollect ng Jordan na rare siya, tatas yung value. Hanggang sa, kaya lang ngayon medyo bumaba na yung Jordan's. Bumaba na yung values niya. So, switch na kami sa mga running shoes. Basta mga mura lang na ano yun na yung focus namin. Doon na kami nag-ano.

Interviewer: Where is the physical store located?

Respondent: Ito dito nga lang sa bahay namin.

Interviewer: What brands and types of footwear do you offer?

Respondent: Ayun, usually Nike, Adidas. Kung anong yung sale namin makukuha, at mag- hoard lang kami, tapos, yun. Kaya mas mura talaga namin nabibeta. Kasi nga, nag-hoard agad si husband ng maraming pairs pag sale. Tapos syempre, pag hindi na sale, doon naman darating yung mga order na wawalk in kung anong onhand namin. Kaya ang layo ng price naming sa ano, sa SM din. Kahit yung mga nag puputang SM diito lang bibili kasi wala raw sila mapili sa SM.

Interviewer: Do you offer other services aside from selling shoes?

Respondent: Ayan, t-shirts. Minsan namimili siya ng t-shirts, oo. Ngayon dinagdag niya yung watch kasi medjo mababa yung selling naming ng ano, sales naming ng shoes. Uso yung relo, uso yung watch. Dinagdag niya yon. Humanap ulit siya ng mga ano, medjo magagandang casio lang naman at tyaka oo casio lang naman binibenta niya.

Interviewer: Pero nagpre-orders din po kayo sa shoes?

Respondent: Ah shoes, oo. Kasi naka-sale, 'di naman lahat ng sale bibili na. So kung ano lang yung tingin niyang mabenta. Kaya pinopost niya lahat isa-isa yun. Tapos, pag may nagpre-order, magda-down lang. Ayan, dun lang namin siya sabay-sabay o-orderin. So pipick up lang nila dito sa ano. Sa shop pag dumating na.

Interviewer: How do customers usually interact with the business?

Respondent: Usually, ayun, sa Facebook. Sa Facebook na lang talaga kami ngayon. Kasi may pick up naman ng JNT ng shipping. So ipipick up na lang ng JNT pag malayong lugar. Bale delivery schedule na lang kami sa JNT, pick up. Tapos, ito deliver na kahit saan naman. Out of the country naman. DHL pa yun o FedEx. Nagsiship din siya sa ibang ano... International? Oo. Fed, baka FedEx. Ano pa yun? Nakalimutan ko na. Mamaya pag lumabas siya.

Interviewer: Do you manage inventory manually, or do you use a system for stock tracking?

Respondent: Ayun. Yung sa stocks ang may ginagamit siya na app. Fiddler ata? Fiddler. Hindi ko alam kung kakasabi na. Paglabas niya mamaya. Tanong ko lang ulit mamaya.

Interviewer: How do you handle transactions?

Respondent: Pwede naman cash, meron naman kaming mga bank. Installment wala wala hindi kami nagpapa installment. Una yung bayad sa sapatos eh bago ano. May down payment lagi. At tyaka kami, pag namili kasi lalo pag sa reseller, kunyari medyo rare. Diretso, full payment agad kami. Doon sa ano.

Interviewer: How do you handle deliveries?

Respondent: Kapag pre-order, kadalasan ay pick-up o delivery pa rin naman. May pick-up service naman ang J&T para sa shipping, kaya kukunin na lang nila kung malayo ang lugar. I-schedule na lang namin ang pick-up sa J&T, tapos sila na ang magde-deliver kahit saan. Kung international shipping naman, ginagamit namin ang DHL o FedEx—parang may isa pa, pero nakalimutan ko na. Baka maalala ko mamaya kapag nabanggit ulit.

Interviewer: Are there any features or suggestions for improving customer experience?

Respondent: Ang hirap lang siya, Tapos masasuggest ko lang na.magandang feature ng app kasi usually pag nagpopost kami, kaya nang popost kami ng pre-order, ano nang lagay na yung sizes? tatanong pa na mga may size nito, nakapost na nga lahat eh parang pinopost na kasi namin lahat ng sizes available, ng prices lahat na talaga, kumbaga as is na kung ano yung andoon kaya lang maraming nagtatanong mag chat na May size gano'n to po. May size gano'n to. Oh, kulit no. Doon siya naii-inis. Sinabi na nga yong ano, tapos kung magkano pa, lahat. Naka post na kasi. lahat eh.

Respondent: Tapos ang nasasuggest ko nga na future ng app. Kung baga, pag sinabi ng customer na ano yung available nyo na on hand na size gano'n to. Pwede ba yung lalabas na lahat?

Interviewer: Naka filter. Naka-filter po.

Respondent: Oo. Naka lagay na lahat na. Ano ba yan? App na pupuntahan ng... Ano? Or chat?

Interviewer: Yung sa part po ng website po sana. website-based. Tapos yung AR po yung naka-app. Bali sa website po. Sasabihin po doon ng website. Download this app for the testing of shoes. Yung try on phone. So kailangan po ng camera. For AR. So app yun.

APPENDIX F
Topical Outline

Topical Outline

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

1. INTRODUCTION (Start with the general topic/area followed by subtopics)

    1. Augmented Reality

    2. Footwear Industry

    3. Footwear Retail and Customization

    4. Portal System

    5. AI-Powered Assistance

2. BASIC CONCEPTS

    1. Augmented Reality Technology

    2. AI-Driven Chatbot in E-Commerce

    3. Database Management System

    4. Inventory Management

    5. Order Management

3. EVALUATION SCHEME MODEL

    1. ISO 25010

4.   SIMILAR MACHINES / APPLICATIONS

   4.1 WANNA AR Try-On and 3D Viewer for Shoes

   4.2 Vyking Virtual Try-On & 3D Experiences

   4.3 GOAT AR Try-On

5.   DESIGN CONSIDERATIONS / CRITERIA IN TERMS OF RELIABILITY

   5.1 Software Requirements

      5.1.1 Java EE (Jakarta EE)

      5.1.2 DeepAR

      5.1.3 Firebase

      5.1.4 Internet Connection

      5.1.5 Windows OS (10 or 11)

   5.2 Hardware Requirements

      5.2.1 Desktop Computer

      5.2.2 Laptop

      5.2.3 Printer

      5.2.4 Router

      5.2.5 Mobile Device

APPENDIX G
Additional Diagrams

APPENDIX H
Data Dictionary

Transaction Order Table

System Name: Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance For 81 Points				
Subject: Transaction Order Table				
PK	FK	Field Name	Data Type	Description
yes	No	order_id	INT	Order ID
No	Yes	customer_id	INT	Customer ID
No	Yes	shoe_id	INT	Shoe ID
No	No	quantity	INT	Shoe Quantity
No	No	date	DATE	Date of Order
No	No	address	VARCHAR	Address
No	No	total_cost	INT	Total Cost
No	No	status	VARCHAR	Order Status

Inventory Table

System Name: Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance For 81 Points				
Subject: Inventory Table				
PK	FK	Field Name	Data Type	Description
yes	No	inventory_id	INT	Inventory ID
No	yes	shop_id	INT	shop ID
No	Yes	shoe_id	INT	Shoe ID
No	No	stock	VARCHAR	Stock
No	No	code	INT	Shoe Code
No	No	name	VARCHAR	Name

No	No	brand	VARCHAR	Brand
No	No	model	VARCHAR	Mode
No	No	size	INT	Size
No	No	color	VARCHAR	Color

Employee Table

System Name: Smartfit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance For 81 Points				
Subject: Employee Table				
PK	FK	Field Name	Data Type	Description
Yes	No	employee_id	INT	Employee ID
No	Yes	shop_id	INT	shop ID
No	Yes	order_id	INT	Order ID
No	No	fname	Varchar	Employee's first name
No	No	lname	Varchar	Employee's lastname
No	No	email_address	Varchar	Employee's email address
No	No	password	Varchar	password
No	No	contact_number	INT	Contact number
No	No	position	VARCHAR	Position

APPENDIX I
Evaluation Instrument

Good day!

We are currently developing our project entitled _SMARTFIT: An Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance_.
Please evaluate our system based on the criteria below. Thank you.

NAME:_____   AGE:_____

COMPANY/SCHOOL:_____   COURSE/POSITION:_____

INSTRUCTION: Read each question carefully and check (/) the corresponding number of choices.

5 – EXCELLENT   4 – VERY GOOD   3 – GOOD   2 – FAIR   1 – POOR

  * Please use appropriate ratings for acceptance testing

FUNCTIONAL SUITABILITY	5	4	3	2	1
The system covers all the specified tasks and user objectives.					
The system provides the correct results with the needed degree of precision					
The system facilitates the accomplishment of specified tasks and objectives.					
PERFORMANCE EFFICIENCY					
The response and processing times of the system meet the requirements.					
The amounts and types of resources used by the system meet requirements					
The maximum limits of the system meet requirements.					
COMPATIBILITY					
The system can perform its required functions efficiently while sharing a common environment and resources with other systems.					
The system or system components can exchange information to other systems.					
USABILITY					
The system is appropriate to the needs of the user.					
The system can be used by specified users with effectiveness, efficiency, freedom from risk and satisfaction.					
The system has attributes that make it easy to operate and control.					
The system protects users from making errors.					
The user interface enables pleasing and satisfying interaction for the user.					
The system can be used by people with the widest range of characteristics and capabilities.					
RELIABILITY					

The system meets needs for reliability under normal operation.					
The system is operational and accessible when required for use.					
The system operates as intended despite the presence of hardware or software faults.					
The system can recover affected data and re-establish the desired state.					
SECURITY					
The system ensures that data are accessible only to those authorized to have access.					
The system prevents unauthorized access to, or modification of, computer programs or data.					
The actions or events can be proven to have taken place and cannot be rejected later.					
The actions of users can be traced.					
The identity of a user can be authenticated and proved to be the one claimed.					
MAINTAINABILITY					
The system is composed of modules such that a change to one component has minimal impact on other components.					
A system component can be used in more than one system, or in building other components.					
The system can be assessed and diagnosed for deficiencies or errors.					
The system can be effectively and efficiently modified without introducing defects or degrading quality.					
The system can be tested to determine whether test criteria have been met.					
PORTABILITY					
The system can effectively and efficiently be adapted for different or evolving hardware or software environments.					
The system can be successfully installed and/or uninstalled in a specified environment.					
The system can replace another specified software product for the same purpose in the same environment.					

Are you in favor in implementing the _SMARTFIT: An Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance_.

_____YES   _____NO

Comments and Suggestions:_____

_____

_____

Proponents:

Bautista, Veeny Ree Mae R.

Ochea, Leander P

Parubrub, Marc Steeven B.

Ramos, Annabel N.

.

BSIT-NW4B

APPENDIX J
Summary of Evaluation

SUMMARY OF EVALUATION RESULTS

CRITERIA	5	4	3	2	1	TOTAL RESPONDENTS	SUB CRITERION MEAN	CRITERION MEAN	DESCRIPTIVE INTERPRETATION
Functional Suitability									
Functional Completeness	75	23	3	1	1	103	4.66		Excellent
Functional Correctness	75	22	6	0	0	103	4.67		Excellent
Functional Appropriateness	77	23	3	0	0	103	4.73		Excellent
								4.69	Excellent
Reliability									
Maturity	67	29	6	1	0	103	4.57		Excellent
Availability	80	15	6	1	1	103	4.67		Excellent
Fault Tolerance	69	27	5	2	0	103	4.59		Excellent
Recoverability	74	20	7	2	0	103	4.61		Excellent
								4.61	Excellent
Compatibility									
Co-existence	71	26	6	0	0	103	4.64		Excellent
Interoperability	75	23	4	0	1	103	4.67		Excellent
								4.66	Excellent
Usability									
Appropriateness Recognizability	77	21	3	2	0	103	4.68		Excellent
Learnability	75	24	3	0	1	103	4.67		Excellent
Operability	74	24	4	1	0	103	4.66		Excellent
User Error Protection	74	22	6	1	0	103	4.64		Excellent
User Interface Aesthetics	77	22	4	0	0	103	4.71		Excellent
Accessibility	69	28	5	1	0	103	4.60		Excellent
								4.66	Excellent
Performance Efficiency									
Time Behaviour	73	26	4	0	0	103	4.67		Excellent
Resource Utilization	66	31	5	1	0	103	4.58		Excellent
Capacity	67	27	8	1	0	103	4.55		Excellent
								4.60	Excellent
Security									
Confidentiality	78	22	3	0	0	103	4.55		Excellent
Integrity	75	25	3	0	0	103	4.70		Excellent
Non-repudiation	75	20	7	1	0	103	4.64		Excellent
Accountability	69	25	7	2	0	103	4.56		Excellent
Authenticity	73	26	3	0	1	103	4.65		Excellent
								4.66	Excellent
Maintainability									
Modularity	69	27	7	0	0	103	4.61		Excellent
Reusability	65	31	5	1	1	103	4.54		Excellent
Analysability	68	27	7	1	0	103	4.58		Excellent
Modifiability	71	22	9	1	0	103	4.58		Excellent
Testability	73	23	6	0	1	103	4.63		Excellent
								4.59	Excellent
Portability									
Adaptability	75	25	2	0	1	103	4.68		Excellent
Installability	67	28	8	0	0	103	4.58		Excellent
Replaceability	69	24	10	0	0	103	4.58		Excellent
								4.61	Excellent
Overall Result								4.64	**Excellent**

APPENDIX K
Progress report

DATE: **March 11, 2025**

FROM: **Group 6 – Innovator Crews**

NW3B

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal   with AI-Powered Assistance.

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (0%)

Date: March 11, 2025

Finished Activity: None

Description: None

Date: March 15, 2025

Next Activity: Login/Registration Page

Description: Lets users to create an account and login to access the website.

DOCUMENTATION: (33.33%)

Date: March 11, 2025

Finished Activity: Chapter 1

Description: an overview of the project, including its background, objectives, and scope.

Date: March 15, 2025

Next Activity: Chapter 2

Description: A RRL and Studies that relevant to the project

DATE: **March 17, 2025**

FROM: **Group 6 – Innovator Crews**

NW3B

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

RE : **PROGRESS STATUS REPORT**

SOFTWARE: (0.5%)

Date: March 17, 2025

Finished Activity: Login and Registration Page

Date: March 24, 2025

Next Activity: Revised Login and Registration and Dashboard, Collection, Search and Profile Page

DOCUMENTATION: (33.33%)

Date: March 17, 2025

Finished Activity: Revised Chapter 1

Description: an overview of the project, including its background, objectives, and scope.

Date: March 24, 2025

Next Activity: Chapter 2

Description: A RRL and Studies that relevant to the project

DATE: **April 4, 2025**

FROM: **Group 6 – Innovator Crews**

NW3B

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (6.67%)

Date: April 04,2025

Finished Activity: Log in and Registration System

Description: Allowing customers and shop owners to register through registration module.

Date: April 11, 2025

Next Activity: Missing features from previous consultation & Inventory Management System

Description: Allow shop owner to register his employees; business docs for shop owners; do not redirect to log-in page without email verification; Reject notification (thru email); Providing shop owners and employees with an inventory management module to update stock levels and manage online catalogue through module.

DOCUMENTATION: (33.33%)

Date: April 04,2025

Finished Activity: Chapter 2 – Draft

Description: Review of Related Literature and Studies

Date: April 11,2025

Next Activity: Chapter 2 – Revision

Description: Improving Chapter 2 documentation

DATE: **April 11, 2025**

FROM: **Group 6 – Innovator Crews**

NW3B

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (13.33 %)

Date: April 11, 2025

Finished Activity: Inventory Management System / Dashboard

Description: Providing shop owners and employees with an inventory management module to update stock levels and manage the online catalogue through inventory management module.

Date: April 24, 2025

Next Activity: Augmented reality feature and customization option

Description: Enabling customers to access augmented reality features that let them try on the shoes. Offering customization option for shoes that allows customers to personalize their selections and receive accurate cost estimates.

DOCUMENTATION: (33.33%)

Date: April 04, 2025
Finished Activity: Chapter 2 Draft

Description: Review of Related Literature and Studies

Date: April 24, 2025

Next Activity: Chapter 2 – Revision

Description: Improving Chapter 2 documentation

DATE: **May 2, 2025**

FROM: **Group 6 – Innovator Crews**

     NW3B

     SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (30 %)

Date: May 2, 2025

Finished Activity: The system that needs improvement from last week, ordering, and tracking module.

Description: Employee email link after verification, connect the chatbot, tracking system that lets customers to monitor the status of her shoe orders real-time.

Date: May 09, 2025

Next Activity: Augmented Reality Feature and Customization, previous improvements needed

Description: Restock feature from inventory module, Access of Augmented Reality feature, Customization option for shoes, maintainability of AI Chatbot

DOCUMENTATION: (33.33%)

Date: May 2, 2025

Finished Activity: Chapter 2 - Draft

Description: Review of Related Literature and Studies

Date: May 09, 2025

Next Activity: Chapter 3 – Draft

 Description: Methodology

DATE: **May 9, 2025**

FROM: **Group 6 – Innovator Crews**

NW3B

SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (60%)

Date: May 09, 2025

Finished Activity: The system that needs improvement from ratings and reviews, chatbot and AR.

Description: Deployed the count of customers that feedback on a specific shoe and also the average rating of stars. Added chatbot population for suggested and popular questions.

Date: May 16, 2025

Next Activity: Augmented Reality Feature and Customization,
previous improvements needed

Description: Restock feature from inventory module, Access of Augmented Reality feature, Customization option for shoes, maintainability of AI Chatbot

DOCUMENTATION: (66.66%)

Date: May 09, 2025

Finished Activity: Chapter 2 – Revision and Chapter 3 Draft

Description: Chapter 3 Diagrams for all the system's function.

Date: May 16, 2025

Next Activity: Chapter 3 – Revision

Description: Chapter 3 revision of diagrams for all the system's function.

DATE: **July 17, 2025**

FROM**: Group 6 – Innovator Crews**

     NW4B

     SmartFit: Augmented Reality-Integrated Footwear Retail And Customization Portal With AI- Powered Assistance

RE : **PROGRESS STATUS REPORT**

SOFTWARE: (60%)

Date: July 17, 2025

Finished Activity: Landing Page and Shop Owner Side UI enhancements and feedback System Implementation.

Description: Improved the UI design of the landing page and shop owner interface and implementation of feedback system with word filtering and spam detection features.

Date: July 31, 2025

Next Activity: AI Chatbot Integration with API and Customer-Side UI Enhancement

Description: AI-powered chatbot should be integrated using third-party APIs to handle inquiries. And customer-side UI design should be improved.

DOCUMENTATION: (66.6%)

Date: July 17, 2025

Finished Activity: Chapter 1–3 Revision

Description: Review of Related Literature and Studies & Diagrams

Date: July 31, 2025

Next Activity: Chapter 1–3 Revision

Description: Use Case Diagram & NoSQL Schema Drafting

DATE: **August 1, 2025**

FROM: Group 6 – Innovator Crews

SMARTFIT: SmartFit: Augmented Reality-Integrated Footwear Retail And Customization Portal With AI- Powered Assistance

RE : **PROGRESS STATUS REPORT**

SOFTWARE: (60%)

Date: August 1, 2025

Finished Activity: AI Chatbot Integration with API and Customer-Side UI Enhancement

Description: AI-powered chatbot should be integrated using third-party APIs to handle inquiries. And customer-side UI design should be improved.

Date: August 8, 2025

Next Activity: Shoe Customization

Description: Development of Shoe Customization in the Frontend and Backend.

DOCUMENTATION: (66.6%)

Date: August 1, 2025

Finished Activity: Chapter 3 Diagram Revision

Description: Use Case Diagram & NoSQL Schema Drafting

Date: August 8, 2025

Next Activity: Chapter 3 Diagram Revision and Introduction to Chapter 4

Description: Use Case Diagram and Chapter 4 Draft

DATE: **August 22, 2025**

From**: Group 6 – Innovator Crews**

    NW4B

    SmartFit: A Developed Augmented Reality-Integrated Footwear Retail And Customization Portal With Ai- Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (84.44%)

Date: August 22, 2025

Finished Activity: AI Chatbot API Integration, Shoe Verification, Cancel Button Fix, Inline CSS in Admin Response, and Customization Page Enhancement

Description: Integrated chatbot API, implemented shoe verification for all roles, fixed cancel button, applied inline CSS in admin response, and improved customization page design.

Date: August 29, 2025

Next Activity: AR Implementation, Image Replacement and Adjustment, and Functional Customization

Description: Targeting to develop working AR features, replace broken product images with proper angles, and complete shoe customization functionality.

DOCUMENTATION: (66.6%)

Date: August 22, 2025

Finished Activity: Chapter 4 Draft.

Description: Results and Discussions

Date: August 29, 2025

Next Activity: Chapter 4 Revision.

Description: Test Results and Chapter 4 Revision.

DATE: **August 29, 2025**

FROM: **Group 6 – Innovator Crews**

NW4B

SMARTFIT: Augmented Reality-Integrated Footwear Retail and Customization Portal With AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (86.67%)

Date: August 29, 2025

Finished Activity: Color option buttons in AR mobile applications and revision of models

Description: This buttons serves as the color option where the model updates the color for our customization feature

Date: September 3, 2025

Next Activity: Working/Updating color shoe model

Description: The user can now change color of the model

DOCUMENTATION: (66.66%)

Date: August 29, 2025

Finished Activity: Chapter 4 Revision

Description: Test Results and Chapter 4 Revision

Date: September 3, 2025

Next Activity: Preliminaries, Bibliography & Appendices

DATE: **September 3, 2025**

FROM: **Group 6 – Innovator Crews**

NW4B

SMARTFIT: Augmented Reality-Integrated Footwear Retail and Customization Portal With AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (86.67%)

Date: September 3, 2025

Finished Activity: Working/Updating color shoe model

Description: The user can now change color of the model

Date: September 10, 2025

Finished Activity: Working/Updating color shoe model

Description: The user can now change color of the model

DOCUMENTATION: (83.35 %)

Date: September 3, 2025

Finished Activity: Preliminaries, Bibliography & Appendices

Description: Appendix letter A to P

Date: September 10, 2025

Next Activity: Preliminaries, Bibliography & Appendices

Description: Update User's Manual

DATE: **September 3, 2025**

FROM: **Group 6 – Innovator Crews**

NW4B

SMARTFIT: Augmented Reality-Integrated Footwear Retail and Customization Portal With AI-Powered Assistance

RE　　: **PROGRESS STATUS REPORT**

SOFTWARE: (86.67%)

Date:　September 3, 2025

Finished Activity: Working/Updating color shoe model

Description: The user can now change color of the model

Date:　September 10, 2025

Finished Activity: Customization

Description: Add more customization options for customers

DOCUMENTATION: (83.35 %)

Date: September 3, 2025

Finished Activity: Chapter 5 - Draft

Description: Summary and Recommendations

Date: September 10, 2025

Next Activity: Chapter 5 - Revision

Description: Chapter 5 - Revision

DATE: **September 17, 2025**

FROM: **Group 6 – Innovator Crews**

NW4B

SMARTFIT: Augmented Reality-Integrated Footwear Retail and Customization Portal With AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (91%)

Date: September 17, 2025

Finished Activity: Customization

Description: Add more customization options for customers

Date: October 1, 2025

Finished Activity: Augmented Reality Revision

Description: Fitting first before purchasing a shoes

DOCUMENTATION: (83.35 %)

Date: September 17, 2025

Finished Activity: Chapter 5 - Revision

Description: Chapter 5 - Revision

Date: October 1, 2025

Next Activity: Preliminaries, Bibliography & Appendices

Description: Abstract, Dedication, and User's Manual

DATE: **October 8, 2025**

FROM: **Group 6 – Innovator Crews**

NW4B

SMARTFIT: Augmented Reality-Integrated Footwear Retail and Customization Portal With AI-Powered Assistance

RE   : **PROGRESS STATUS REPORT**

SOFTWARE: (96.67%)

Date: October 1, 2025

Finished Activity: 2d Mapping

Description: Add more customization options for customers

Date: October 8, 2025

Finished Activity: Add Google Maps API

Description: For shipping location of shoe seller and customer

DOCUMENTATION: (100 %)

Date: October 1, 2025

Finished Activity: Preliminaries, Bibliography & Appendices

Description: Update of Abstract, Dedication, and User's Manual

Date: October 8, 2025

Next Activity: Preliminaries, Bibliography & Appendices

Description: Update of User's Manual

APPENDIX L
Consultation Forms

CONSULTATION AND FEEDBACK FORM

Date of Consultation	Time of Consultation	Number of Hours/Minutes
Format of Consultation (please check appropriate box)	□ scheduled meeting □online (email, chat) □SMS □other format _____	
Course Code / Title	ITCC1513 - Capstone Project and Research 2	
Name of Faculty	Cherry A. Collera, PhD	
Name of Student/s	Veeny Ree Mae R. Bautista Marc Steeven B. Parubrub Armabel N. Ramos Leander P. Ochea	
Summary of Consultation		
Action Points		

Submitted by: _____   Noted by: _____

Name of Student/Signature/Date   Name of Faculty/Signature/Date

Date of Consultation	Time of Consultation	Number of Hours/Minutes
Format of Consultation (please check appropriate box)	□scheduled meeting □online (email, chat) □SMS □other format _	
Course Code / Title	ITCC1513 - Capstone Project and Research 2	
Name of Faculty	Cherry A. Collera, PhD	
Name of Student/s	Veeny Ree Mae R. Bautista Marc Steeven B. Parubrub	

	Armabel N. Ramos Leander P. Ochea
Summary of Consultation	
Action Points	

Submitted by: _____

Noted by: _____

Name of Student/Signature/Date   Name of Faculty/Signature/Date

APPENDIX M
Request for Oral Presentation

APPENDIX N
Waiver

CAPSTONE DEFENSE WAIVER FORM

To the Board of Examiners:

We, Veeny Ree Mae Bautista and Arnold Bautista hereby understand that some of the objectives we have set on our Capstone Project entitled: SmartFit: Augmented Reality- Integrated Footwear Retail and Customization Portal with AI-Powered Assistance did not meet the requirements evaluated by the Initial Panel of Examiners during the Pre-Final Defense on October 14, 2025.

We promise to do the best of our ability to fulfill these requirements to attain a passing grade for this research/project. We understand that failure to comply with all the requirements set by the panelists before the scheduled final defense will result in a failing grade for this research/project.

Sincerely,

Veeny Ree Mae Bautista
Name of Student

Arnold Bautista
Name of Parent/Guardian

Date Signed: <u>October 13, 2025</u>

Acknowledged by:

Prof. Marissa B. Ramos
Signature over Printed
Name of Technical Panelist

Ms. Jhanine L. De Jesu
Signature over Printed
Name of Technical Panelist

Ms. Stephanie Rose T. Basilio
Signature over Printed
Name of Technical Panelist

Cherry A. Collera, PhD
Signature over Printed
Name of Capstone Adviser

Maria Lolita G. Masangcap, DIT
Dean, CCST

CAPSTONE DEFENSE WAIVER FORM

To the Board of Examiners:

We, Leander Ochea and Racquel Pascua hereby understand that some of the objectives we have set on our Capstone Project entitled: SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance did not meet the requirements evaluated by the Initial Panel of Examiners during the Pre-Final Defense on October 14, 2025.

We promise to do the best of our ability to fulfill these requirements to attain a passing grade for this research/project. We understand that failure to comply with all the requirements set by the panelists before the scheduled final defense will result in a failing grade for this research/project.

Sincerely,

Leander Ochea	Racquel Pascua
Name of Student	Name of Parent/Guardian

Date Signed: <u>October 13, 2025</u>

Acknowledged by:

Prof. Marissa B. Ramos	**Ms. Jhanine L. De Jesus**	**Ms. Stephanie Rose T. Basilio**
Signature over Printed Name of Technical Panelist	Signature over Printed Name of Technical Panelist	Signature over Printed Name of Technical Panelist

Cherry A. Collera, PhD
Signature over Printed
Name of Capstone Adviser

Maria Lolita G. Masangcap, DIT
Dean, CCST

CAPSTONE DEFENSE WAIVER FORM

To the Board of Examiners:

We, Marc Steeven Parubrub and Nieves Birung hereby understand that some of the objectives we have set on our Capstone Project entitled: SmartFit: Augmented Reality- Integrated Footwear Retail and Customization Portal with AI-Powered Assistance did not meet the requirements evaluated by the Initial Panel of Examiners during the Pre-Final Defense on October 14, 2025.

We promise to do the best of our ability to fulfill these requirements to attain a passing grade for this research/project. We understand that failure to comply with all the requirements set by the panelists before the scheduled final defense will result in a failing grade for this research/project.

Sincerely,

Marc Steeven Parubrub	Nieves Birung
Name of Student	Name of Parent/Guardian

Date Signed: <u>October 13, 2025</u>

Acknowledged by:

Prof. Marissa B. Ramos	**Ms. Jhanine L. De Jesus**	**Ms. Stephanie Rose T. Basilio**
Signature over Printed Name of Technical Panelist	Signature over Printed Name of Technical Panelist	Signature over Printed Name of Technical Panelist

Cherry A. Collera, PhD
Signature over Printed
Name of Capstone Adviser

Maria Lolita G. Masangcap, DIT
Dean, CCST

CAPSTONE DEFENSE WAIVER FORM

To the Board of Examiners:

We, Armabel Ramos and Isabel Ramos hereby understand that some of the objectives we have set on our Capstone Project entitled: SmartFit: Augmented Reality-Integrated Footwear Retail and Customization Portal with AI-Powered Assistance did not meet the requirements evaluated by the Initial Panel of Examiners during the Pre-Final Defense on October 14, 2025.

We promise to do the best of our ability to fulfill these requirements to attain a passing grade for this research/project. We understand that failure to comply with all the requirements set by the panelists before the scheduled final defense will result in a failing grade for this research/project.

Sincerely,

Armabel Ramos
Name of Student

Isabel Ramos
Name of Parent/Guardian

Date Signed: <u>October 13, 2025</u>

Acknowledged by:

Prof. Marissa B. Ramos

Signature over Printed
Name of Technical Panelist

Ms. Jhanine L. De Jesus

Signature over Printed
Name of Technical Panelist

Ms. Stephanie Rose T. Basilio

Signature over Printed
Name of Technical Panelist

Cherry A. Collera, PhD
Signature over Printed
Name of Capstone Adviser

Maria Lolita G. Masangcap, DIT
Dean, CCST

APPENDIX O
User's Manual

Shop User's Manual

Registration Module

   The shop owner can create an account by entering the required details like shop name, email address, and password. Once submitted the form, the account was saved in the system for future login.

Years in Business

Type the years in business here

e.g. 5

| 👤 Owner Information

Full Name*

Type your full name here

Your full name

Email*

Type your email address here

your@email.com

Phone Number*

Type your phone number here

+63   9123456789

Enter your 10-digit Philippine mobile number (without +63)

Government ID Verification*

Please upload clear photos/scans of both sides of your valid government-issued ID

Upload your government ID here

Front Side

Back Side

Business Documentation

Tax Identification Number*

XXXX-XXXX-XXXX

Enter your 12-digit TIN (e.g., 1234-5678-9012). If your TIN has fewer than 12 digits, add zeros at the beginning to make it 12 digits long.

Mayor's Permit / Business License*

Upload File

Choose File No file chosen

(JPEG, PNG, or PDF - Max 5MB)

Business Permit*

Upload File

Type your TIN ID here

Upload your business license here

Upload your business license here

Choose File | No file chosen

(JPEG, PNG, or PDF - Max 5MB)

DTI Registration Document*

Upload File

Upload your DTI
registration here

Choose File | No file chosen

(JPEG, PNG, or PDF - Max 5MB)

BIR Registration Document*

Upload File

Upload your BIR
registration here

Choose File | No file chosen

(JPEG, PNG, or PDF - Max 5MB)

SMARTFIT

AUGMENTED REALITY-INTEGRATED FOOTWEAR RETAIL AND CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

🔒 **Account Security**

Username*

Type your username here → customerdemosmartfit@gmail.com

Password*

Type your password here → ••••••••••••••••

✓ At least 8 characters
• At least one uppercase letter
• At least one number
• At least one special character

Password strength: Weak

Confirm Password*

Type your password here → Confirm your password

Check the checkbox to proceed ← ☐ I agree to the Terms of Service and Privacy Policy*

Click "SUBMIT APPLICATION" to verify your application → **SUBMIT APPLICATION**

* Required fields. Your application will be reviewed within 3-5 business days.

Verification through Email

Once registered, the shop owner received a verification email. The owner must click the verification link to activate and confirm the account.
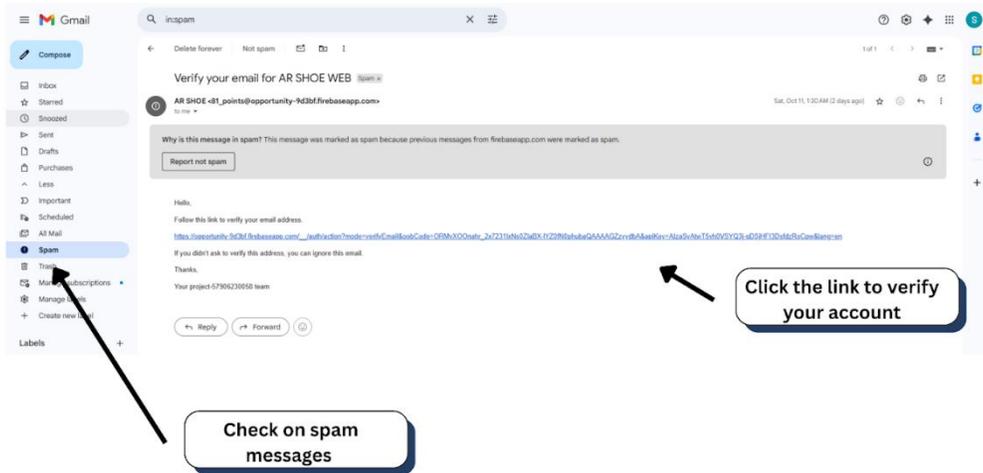
Add Employee

The shop owner can add new employees by entering their information like their name, email address, and assigned position. This helps manage who can access and assist in the shop's operations.

SMARTFIT

AUGMENTED REALITY-INTEGRATED FOOTWEAR RETAIL AND
CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

Type your email here

Type your password here

Click log in to direct to dashboard.

Add Shoes

The shop owner can upload shoe details including name, brand, size, price, and image. These products should be displayed and available for customers to view and purchase.

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Shop Inventory

Displays all the shoe items available in the shop with real-time stock updates. The owner can edit, remove, or restock items when necessary.

Customer Reviews

      The shop owner can view feedback and ratings from customers about the

shoes for service. This helps identify area for improvement and maintain customer

satisfaction.

Order Management

　　　Allow the shop owner to handle every order coming from customers. They're able to approve, prepare, ship, or cancel order whenever necessary.

Shoe Verification

Before publishing products, the shop owner reviews each shoe's specifications so it's legit and correct – this way, only confirmed pairs show up on the website.

Order Tracking

The shop owner keeps an eye on how things were moving along – like when orders get processing, shipping, or delivery. This allows them to keep customers informed about their purchases.

Customer Issue Report

The shop owner can review and respond to complaints or issues raised by customer. This feature helps build and maintain trust that improves customer service.

Shop Analytics

    The shop owner can view sales analytics, top-selling shoes, and overall shop performance. This provides real-time data that supports better business decisions.

AI Recommendation

The system recommneds shoes to customers based on their own preferences and browsing history. This enabled them to find styles that align with their taste quickly.
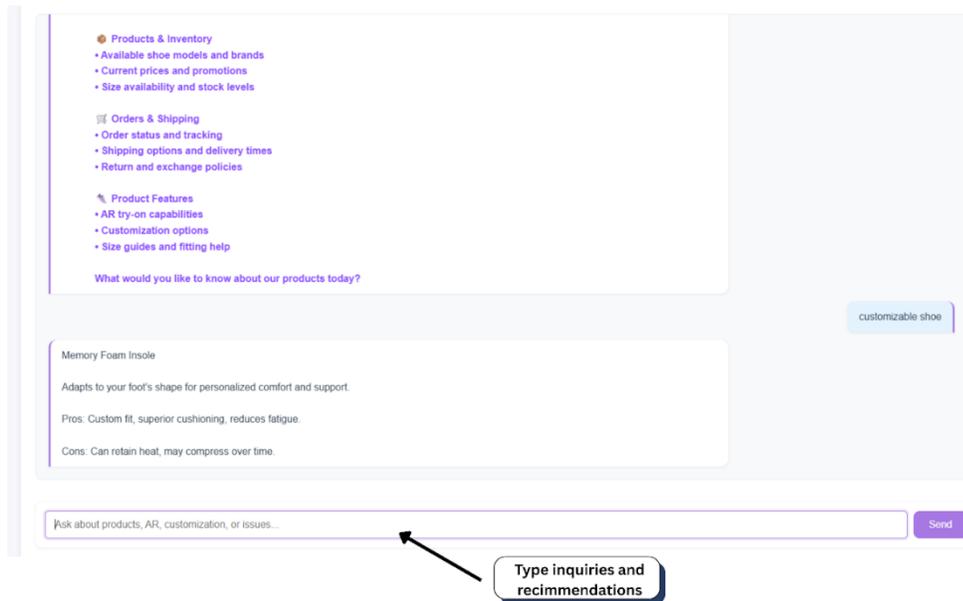
Profile Settings

Shop owners can update their store information, including the name, contact details, and password. This ensures that the profile always remains up-to-date and secure.

Customer User's Manual

Registration Module

      Customers can create an account with some basic info like name, email address, and password. Once completed the registration, the account has stored for logins next time.

| 🔒 Account Security

Username*

Type your
username here → customerdemosmartfit@gmail.com

Password*

Type your
password here → •••••••••••••••••• 👁

✓ At least 8 characters
• At least one uppercase letter
• At least one number
• At least one special character

Password strength: Weak

Confirm Password*

Type your
password here → Confirm your password 👁

Profile Photo

Profile Photo

👤
Upload Photo

Upload your
profile picture → Choose File No file chosen

(JPEG or PNG - Max 2MB)

Check to agree to the
terms of services

Check to receive
updates → ☐ I agree to the Terms of Service and Priva...

Check for faster
checkout.

Click "CREATE ACCOUNT"
button to create a account → **CREATE ACCOUNT**

* Required fields. By creating an account, you agree to our terms and conditions.

Email Verification

    After registrations, the customer should receive a confirmation email. It becomes necessary to click on the verfication link contained in the email to activate their account.
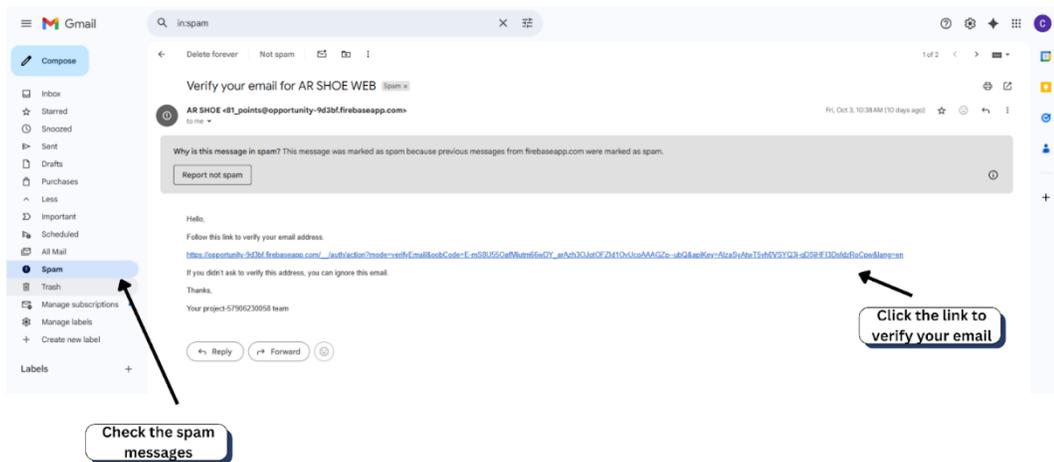
Check the spam messages

Click the link to verify your email

Log In

    Customers can login using their registered email address and password.

They may also use the Google login for quicker and easier access.

Browse Shoes

The customer can see all the footwear available in the store, with specifications on size, colors, and prices, making it easy to find the one that suits them.

Try AR

      Users can utilize the Augmented Reality (AR) capability to check what shoes look like when worn. In this way, customers can see how the shoes fit on their feet before committing to a purchase.

SMARTFIT

AUGMENTED REALITY-INTEGRATED FOOTWEAR RETAIL AND CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

SmartFit - AR Try-On

Point your camera at your feet to see the shoes in real-time. Swipe to browse options.

Option like Switch cam

View the AR

AR options

Filter the options for AR

Show Filters

High-Top Basketball

Black Blue Red

White

Classic Sneaker

Black Blue Green Red

White

Performance Runner

Black Blue

Red

Buy Now

Click to buy the specific shoe

Customization (Classic Sneaker, Performance Runner, High-Top Basketball)

Customers can look at all the shoes available at the store and their attributes – like sizes, colors, and prices. This dramatically helps the customers find the product that matches their own unique style.

SMARTFIT

AUGMENTED REALITY-INTEGRATED FOOTWEAR RETAIL AND CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

Your Custom Design

Shoe preview

Front View
Side View
Back View

Try Your Design in Augmented Reality
See how your customized shoe looks in real-world environment before purchasing.

Launch AR Experience

Shoe Parts
Size Reference

Click to try on AR

Shoe Size (US)

| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 |

Select a size of shoe

Body

Body Color

Laces

| Elastic +₱200 | Flat +₱150 | Standard +₱0 |

Customization options

Laces Color

Insole / Shoe Pad

Shoe Parts
Size Reference

Base Price:	₱2499.00
Laces:	+₱200.00
Insole:	+₱120.00
Customization:	+₱320.00
VAT (12%):	+₱338.28
Production Time:	8-11 days
Total Price:	₱3157.28

♥ Save Design   🛍 Buy Now

Shoe guide for customer

| Foam +₱120 | Gel +₱150 | MemoryFoam +₱200 |

Click to buy the customize design

Click to save your customize design

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Place Order

    After selection of a type of shoe, the customer can verify their order and the

related payment. A summary of order was given before it's confirmed.

Laces:	Elastic (+₱200.00)
Laces Color:	● gray
Insole:	MemoryFoam (+₱200.00)

Base Price:	₱2499.00
Customization:	₱400.00
VAT (12%):	₱347.88
Shipping fee:	₱200.00
Total:	₱3446.88

Payment Method

◉ 💵 **Cash on Delivery**
Pay when you receive your order

← Seelct a payment method

Edit Design   ✓ Confirm Order

Click to edit your current design

Click to confirm your order

Model details of the shoe

🧾 My Custom Orders

🕐 Pending   ⚙ In Process   ✓ Order History

CUST-1759816508346   October 7, 2025 at 01:55 PM

Product:	Custom classic Shoe
Status:	DELIVERED
Size:	8
Quantity:	1
Price:	₱3,446.88
Completed On:	10/7/2025

👁 View Details   ← View details of the custom order

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Tracking Order

Customers get to check their order's status – maybe it is being processed, has been shipped, or has been delivered. That way, they can keep an eye on things till the package shows up.

SMARTFIT

AUGMENTED REALITY-INTEGRATED FOOTWEAR RETAIL AND CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

Reviews and Feedback

Customers leave reviews once they get their order. That information

guides future buyers while pushing stores to do better over time.

Shoemaker User's Manual

Available Models

   The shoemaker checks out various shoe models – Classic Sneaker,

Performance Runner, and High-Top Basketball with specifics on materials plus

size choices for every model.
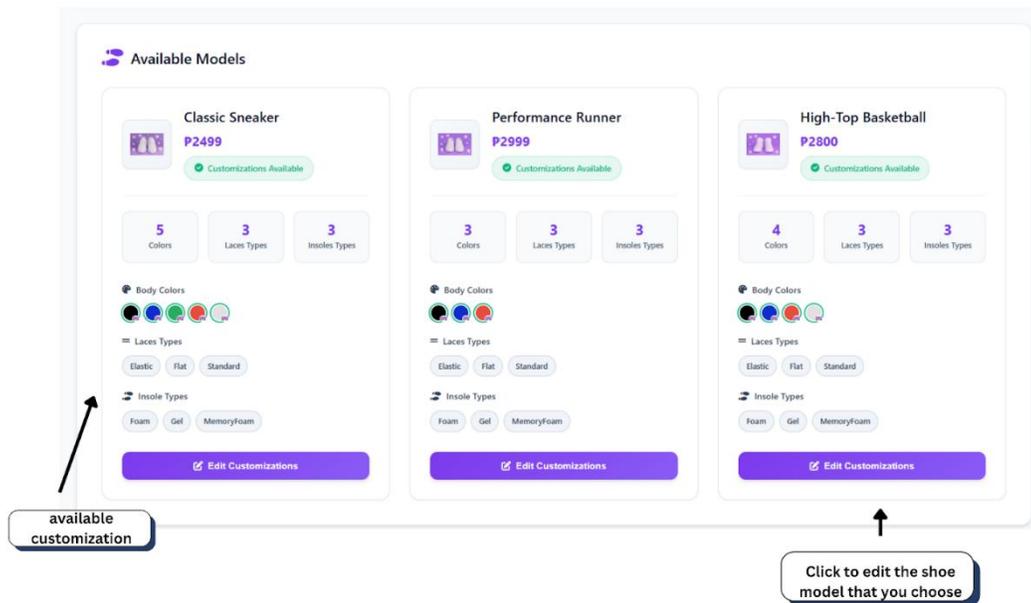
Edit Available Customization

The shoemaker can update or change customization features per shoe model, whether that's tossing in new colors, materials, or design styles.

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AUGMENTED REALITY-INTEGRATED FOOTWEAR RETAIL AND
CUSTOMIZATION PORTAL WITH AI-POWERED ASSISTANCE

Order Management and Tracking

The shoemaker checks new orders from stores or customer. Plus, they change each order's status so its stays on track and completed on time.

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Order Details - #CUST-1760331625016

Customer Information

Name:	kagerou Shoya
Email:	violettafuji@gmail.com
Phone:	8777777777
Address:	Tokyo, Philippines

Shipping Information

Shipping Carrier

asdad ← Type the shipping carrier

Tracking Number

2131 ← Type the tracking number

Ship Date

10/07/2025 ← Select the shipping date

Estimated Delivery

10/07/2025 ← Select the estimated date

Order Summary

1/4

Order Type:	Custom Shoe
Model:	Basketball
Size:	15
Production Time:	11-14 days

Customization

Body Color:	red
Laces:	Elastic (₱200.00)
Laces Color:	white
Insole Type:	MemoryFoam (₱200.00)

← View the order details of the shoes

Order Details - #CUST-1760331625016

Estimated Delivery

10/07/2025 ← Select the estimated delivery

Shipping Notes (Optional)

← Type your shipping notes

💾 Save Shipping Info

Payment Information

Method:	cod
Status:	Paid

Order Status Timeline

October 13, 2025 at 1:03 PM
processing
Order is being processed by shoemaker

Laces Color:	white
Insole Type:	MemoryFoam (₱200.00)

Price Breakdown

Base Price:	₱2800.00
Laces:	+₱200.00
Insole:	+₱200.00
Customization Total:	+₱400.00
Subtotal:	₱3200.00
VAT (12%):	+₱384.00
Shipping:	+₱200.00
Total:	₱3784.00

✕ Close   🔄 Update Status ← Click to update all the status

Analytics

      The dashboard shhows reports of total orders, best selling designs, production statistics. This enables shoemaker to help improve efficiency and customer demand.
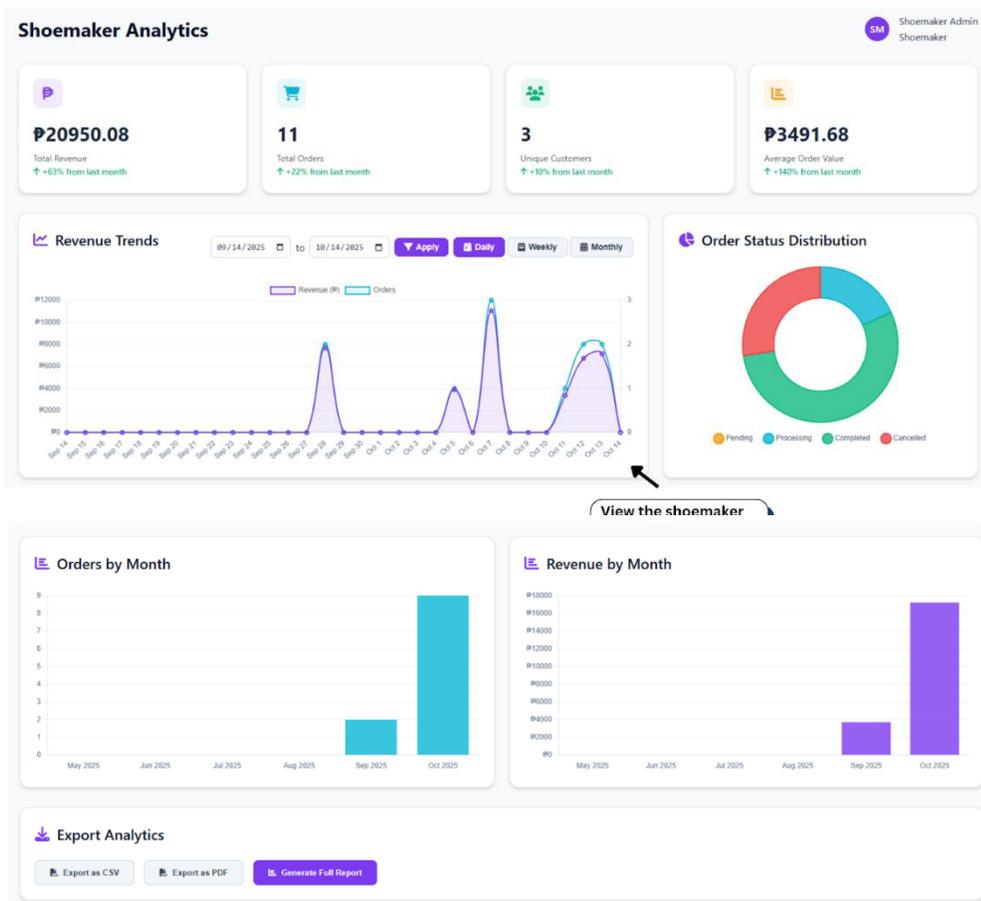
Profile Settings

    The shoemaker can change personal or business details like name, contact

information, and password. This makes sure their profile is up to date and secure.

Admin Dashboard

The admin dashboard shows users, shops, or recent orfers all in one

place. It lets admins keep track of what's happening across the platform.

Shoe Validation

The admin checks each shoe item before it goes live on the system – only
then does approval happen. That way, every pair gets confirmed and matches
what platform expects.

Chatbot Response Manager

The admin sets up new replies, edit existing ones, or removes outdated answers when needed – so users always get useful responses. That way, the chatbot stays current without falling behind.
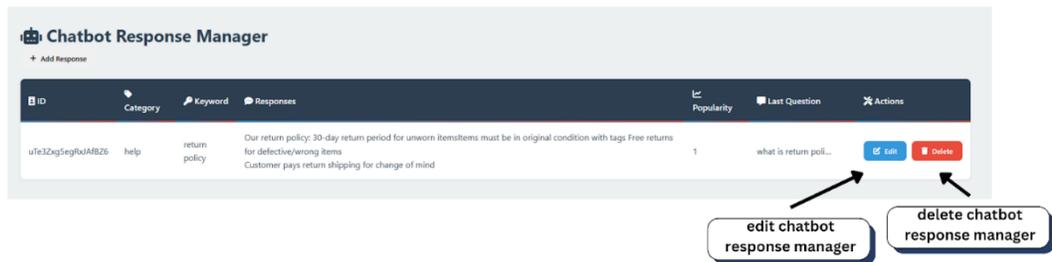
Chatbot Response Manager

The admin handles blocked or offensive terms in the system – this keeps
chats polite and clear throughout the platform.

33% detected as AI

The percentage indicates the combined amount of likely AI-generated text as well as likely AI-generated text that was also likely AI-paraphrased.

Caution: Review required.

It is essential to understand the limitations of AI detection before making decisions about a student's work. We encourage you to learn more about Turnitin's AI detection capabilities before using the tool.

Detection Groups

99 AI-generated only 32%
Likely AI-generated text from a large-language model.

1 AI-generated text that was AI-paraphrased 0%
Likely AI-generated text that was likely revised using an AI-paraphrase tool or word spinner.

Disclaimer

Our AI writing assessment is designed to help educators identify text that might be prepared by a generative AI tool. Our AI writing assessment may not always be accurate (it may misidentify writing that is likely AI generated as AI generated and AI paraphrased or likely AI generated and AI paraphrased writing as only AI generated) so it should not be used as the sole basis for adverse actions against a student. It takes further scrutiny and human judgment in conjunction with an organization's application of its specific academic policies to determine whether any academic misconduct has occurred.

Frequently Asked Questions

How should I interpret Turnitin's AI writing percentage and false positives?
The percentage shown in the AI writing report is the amount of qualifying text within the submission that Turnitin's AI writing detection model determines was either likely AI-generated text from a large-language model or likely AI-generated text that was likely revised using an AI paraphrase tool or word spinner.

False positives (incorrectly flagging human-written text as AI-generated) are a possibility in AI models.

AI detection scores under 20%, which we do not surface in new reports, have a higher likelihood of false positives. To reduce the likelihood of misinterpretation, no score or highlights are attributed and are indicated with an asterisk in the report (*%).

The AI writing percentage should not be the sole basis to determine whether misconduct has occurred. The reviewer/instructor should use the percentage as a means to start a formative conversation with their student and/or use it to examine the submitted assignment in accordance with their school's policies.

What does 'qualifying text' mean?
Our model only processes qualifying text in the form of long-form writing. Long-form writing means individual sentences contained in paragraphs that make up a longer piece of written work, such as an essay, a dissertation, or an article, etc. Qualifying text that has been determined to be likely AI-generated will be highlighted in cyan in the submission, and likely AI-generated and then likely AI-paraphrased will be highlighted purple.

Non-qualifying text, such as bullet points, annotated bibliographies, etc., will not be processed and can create disparity between the submission highlights and the percentage shown.

*% detected as AI

AI detection includes the possibility of false positives. Although some text in this submission is likely AI generated, scores below the 20% threshold are not surfaced because they have a higher likelihood of false positives.

Disclaimer

Our AI writing assessment is designed to help educators identify text that might be prepared by a generative AI tool. Our AI writing assessment may not always be accurate (it may misidentify writing that is likely AI generated as AI generated and AI paraphrased or likely AI generated and AI paraphrased writing as only AI generated) so it should not be used as the sole basis for adverse actions against a student. It takes further scrutiny and human judgment in conjunction with an organization's application of its specific academic policies to determine whether any academic misconduct has occurred.

Frequently Asked Questions

How should I interpret Turnitin's AI writing percentage and false positives?
The percentage shown in the AI writing report is the amount of qualifying text within the submission that Turnitin's AI writing detection model determines was either likely AI-generated text from a large-language model or likely AI-generated text that was likely revised using an AI paraphrase tool or word spinner.

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The AI writing percentage should not be the sole basis to determine whether misconduct has occurred. The reviewer/instructor should use the percentage as a means to start a formative conversation with their student and/or use it to examine the submitted assignment in accordance with their school's policies.

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Our model only processes qualifying text in the form of long-form writing. Long-form writing means individual sentences contained in paragraphs that make up a longer piece of written work, such as an essay, a dissertation, or an article, etc. Qualifying text that has been determined to be likely AI-generated will be highlighted in cyan in the submission, and likely AI-generated and then likely AI-paraphrased will be highlighted purple.

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210

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Matches with neither in-text citation nor quotation marks

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APPENDIX P
Researcher's Profile

VEENY REE MAE BAUTISTA

Skills

- Documentation
- Analysis
- Research
- Adaptability
- Collaboration
- Management Skills

Certification

IC3 Digital Literacy Certification GS6 Level 1
2024

PMI Project Management Ready™
2024

Cyber Threat Management
2024

IT Specialist - Cybersecurity
2024

IT Specialist - Device Configuration and Management
2025

IT Specialist - Network Security
2025

Education

- **Bataan Peninsula State University - Main Campus**

  Bachelor of Science in Information Technology

  2022 - Present

- **Bataan National Highschool**

  Technical-Vocational-Livelihood, ICT Strand – Computer Systems Servicing (CSS)

  2020–2022

- **St. Joseph's College of Balanga City, Bataan**

  2016-2020

- **BEPZ Elementary School**

  2010–2016

Contact

- 09386109857
- vny.btst@gmail.com
- Blk 4 Lot 17 Nagkamayan Upper Tuyo Balanga, Bataan

Personal Data

Civil Status: Single
Sex: Female
Date of Birth: October 02, 2003
Place of Birth: Mariveles, Bataan
Religion: Roman Catholic

ARMABEL RAMOS

Contact

📞 09318982026

✉ armabelramos@gmail.com

🏠 002 Eskinita 1 J.Romero St. Townsite, Limay, Bataan

Personal Data

Civil Status: Single

Sex: Female

Date of Birth: October 25, 2003

Place of Birth: Limay, Bataan

Religion: Roman Catholic

Skills

- Flexibility
- Documentation
- Research Skills
- Collaboration
- Learning Agility

Certification

IC3 Digital Literacy Certification GS6 Level 1
2024

PMI Project Management Ready™
2024

Cyber Threat Management
2024

IT Specialist - Cybersecurity
2024

IT Specialist - Device Configuration and Management
2025

IT Specialist - Network Security
2025

Education

- **Bataan Peninsula State University - Main Campus**
  Bachelor of Science in Information Technology
  2022 - Present

- **Limay Senior High School**
  STEM- Science, Technology, Engineering, and Mathematics
  2020–2022

- **Limay National High School**
  2016-2020

- **Limay Elementary School**
  2010–2016

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LEANDER OCHEA

Contact

📞 09125567205

📧 ochealean@gmail.com

🏠 216 Orchids Street, Mabuco , Hermosa, Bataan

Personal Data

Civil Status: Single

Sex: Male

Date of Birth: May 27, 2003

Place of Birth: Hermosa, Bataan

Religion: Methodist

Skills

- Frontend
- Server-Side
- Environment Configuration
- Cloud Database Integration
- Backend Development

Certification

IC3 Digital Literacy Certification GS6 Level 1
2024

PMI Project Management Ready™
2024

Cyber Threat Management
2024

IT Specialist - Cybersecurity
2024

IT Specialist - Device Configuration and Management
2025

IT Specialist - Network Security
2025

Education

- **Bataan Peninsula State University - Main Campus**

  Bachelor of Science in Information Technology

  2022 - Present

- **Saint Peter of Verona Academy Inc.**

  STEM- Science, Technology, Engineering, and Mathematics

  2020–2022

- **Saint Peter of Verona Academy Inc.**

  2016-2020

- **Hermosa Elementary School**

  2010–2016

MARC STEEVEN PARUBRUB

Skills

- Team Handling
- Adaptability
- Project Management
- Problem Solving
- Frontent Development
- AR Application Development

Certification

IC3 Digital Literacy Certification GS6 Level 1
2024

PMI Project Management Ready™
2024

Cyber Threat Management
2024

IT Specialist - Cybersecurity
2024

IT Specialist - Device Configuration and Management
2025

IT Specialist - Network Security
2025

Education

- **Bataan Peninsula State University - Main Campus**

  Bachelor of Science in Information Technology

  2022 - Present

- **Tomas Del Rosario College**

  STEM- Science, Technology, Engineering, and Mathematics

  2020–2022

- **Tomas Del Rosario College**

  2016-2020

- **St. Joseph Child Development Center**

  2010–2016

Contact

📞 09691731931

✉️ marcsteeven28@gmail.com

🏠 Block 6A Lot 17 Camella Bataan Upper Tuyo, Balanga City, Bataan

Personal Data

Civil Status: Single

Sex: Male

Date of Birth: August 28, 2003

Place of Birth: Balanga, Bataan

Religion: Roman Catholic

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