A MULTIPLATFORM RENTAL SYSTEM WITH AN AI VISUAL CUSTOMIZATION AND 3D MANNEQUIN MODEL FOR AMARABELLIANA'S GOWNS AND EVENTS STYLIST

A Capstone Project Proposal
Presented to the Faculty of the
Information and Communications Technology Program
STI College San Jose Del Monte

In Partial Fulfilment
of the Requirements for the Degree
Bachelor of Science in Information Technology

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June 2024

ENDORSEMENT FORM FOR PROPOSAL DEFENSE

TITLE OF RESEARCH: **A Multiplatform Rental System With An AI Visual Customization and 3D Mannequin Model For Amarabelliana's Gowns and Events Stylist**

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In Partial Fulfilment of the Requirements
for the degree Bachelor of Science in Information Technology
has been examined and is recommended for Oral Defense.

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June 2024

APPROVAL SHEET

This capstone project proposal titled: **A Multiplatform Rental System With An AI Visual Customization and AR Viewing For Amarabelliana's Gowns and Events Stylist** prepared and submitted by **Fiona Mikaela S. Evangelista, Mark Angelo T. Fajela, Bianca Nicole A. Otilla** and **Jerome A. Shurafa** in partial fulfillment of the requirements for the degree of Bachelor of Science in Information Technology, has been examined and is recommended for acceptance and approval.

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Bachelor of Science in Information Technology

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INTRODUCTION

Project Context

In recent years, the concept of rental clothing has gained significant growth in the fashion and retail industry. Rental fashion allows consumers to focus on temporary ownership through borrowing garments for a fixed amount of time. The items borrowed should be returned to the boutique or company once the rental period ends. This type of marketing strategy grants consumers numerous benefits. Rather than owning luxurious gowns and suits, rental fashion offers consumers the opportunity to wear these items which they would much likely use once or cannot afford to own one.

The Amarabelliana's Gowns and Events Stylist has recognized the growing trend of rental fashion and has been in the fashion industry for years, offering a variety of high-quality and luxurious attires, such as gowns and suits, for any special events such as debut, wedding, prom, and pageants in a rental basis. However**,** as Amarabelliana's Gowns and Events Stylist gained more attention and became well-known, the number of their customers increased which they find it more difficult to accommodate because of their manual rental processes. Even though the boutique offers a well-made and high-quality attires, it still faces challenges in terms of providing more options to offer to customers that are based on customers' preferences. It lacks in terms of offering personalization and innovations that can show visual representations that are based on customers' preference. Visualizing the final appearance of the attires based on catalog pictures only, makes it more challenging for the customers, creating uncertainty regarding customers' rental decisions, especially for those who are not able to go to their physical branches and relies only on the pictures that were shown to them through Facebook platform.

The owner of the Amarabelliana's Gowns and Events Stylist aims to have a system where the available variety of gowns and suits are shown together with its equivalent price. The owner wants a system that will store the information of the customers, their rental information and sales report to the administrator's user interface. He wants to have a verification of valid IDs that should be uploaded by the customers as they register their account in the system in order to proceed in renting attires and having transaction with the boutique management.

The proponents from STI College San Jose Del Monte aims to develop a responsive multi-platform rental system that is infused with Artificial Intelligence, for generating image of the attire based on the description inputted by the customers that provides visualizations, and a selection of 3D Mannequin, that enables customers to select specific color tone and body shape from range of options to visualize if the outfit is suitable to the customer and can help in their decision making. This does not only cater the customers' creativity and preferences regarding the design of their desired outfit, but also this system can help them visualize the attire on them without actually fitting it. It also has both automated, specifically for FAQs, and end-to-end communication between the customers and the management for more efficient communication.

The said system will benefit not only the Amarabelliana's Gowns and Events Stylist, as they can manage the records of customer's information and address their requests and queries easily, but also their customers. Moreover, the boutique will gain a significant advantage regarding the utilization of sample gowns and suits as this system can help lessen the risk of garment damage, which ensures the longevity and quality of their inventory.

Purpose and Description

This capstone project aims to develop an innovative online rental boutique experience that can help the clients to experience an efficient and enjoyable rental and customization service. The system will provide an integrated advanced technologies such as AI (Artificial Intelligence) and 3D (Three-Dimensional) Model that will assist the clients in terms of picking their preferred fashion styles.

The core of this project is the implementation of AI that will be used when the clients are having a hard time choose an outfit. It will generate an image of an attire based on the clients' indicated style preference. On the other hand, the selection of a 3D mannequin is also implemented. The mannequin can be selected likely based on their own figure and skin tone where they can drag the gowns or suits that they selected.

By the help of this platform, appointments and transactions between Amarabelliana's and clients will be much easier because there is a messaging feature and online payment options available. It is also time-saving and low-cost because instead of going to boutique's location, the gowns and suits are already in the system for the customer to browse.

Objectives

Specific Objectives:

- **To create an administrative dashboard, for inventory and account management, and staff dashboard, for managing rentals and customer support**

  Creating an administrative dashboard for managing gown and suit inventory effectively, as well as handling staff accounts and user registrations, including their data. Additionally, developing a staff dashboard in order to manage customer rentals and provide customer support.

- **To create a well-designed interface for browsing, selecting, renting gowns & suits**

  Designing an intuitive and easy-to-use interface for users to browse through available gowns and suits, select their desired items, and complete the rental process. This involves considerations for navigation, search functionality and checkout processes.

- **To enable customers schedule appointments with stylists and confirm their bookings**

  This will allow customers to schedule appointments with stylists for consultations or fittings and seek recommendations regarding the attires to be rented and confirm their bookings.

- **To integrate a drag-and-drop feature and 3D Modeling functionality for users to visualize gowns and suits in virtual settings**

  This feature would utilize 3D modeling that allow users to choose the mannequin model based on their body structure and skin tone. Then, this is where they can drag the attires to the 3D mannequin model. This way, they can see how the gown and suit would look on customers virtually, enhancing the visualization experience.

- **To implement AI generated image for visualization of attires**

  This involves incorporating artificial intelligence technology that enables users to digitally ask for a specific design of gowns and suits based on their own preferences.

Scope and Limitations

Scope

- **Home Page**

  An overview and introduction of Amarabelliana's Gown and Events Stylist offering essential information and access points for log in and registration.

- **Login Selection**

  An interface where admin, staffs, and users can choose their login options for proper access. Each have distinctive level of access

Admin Module

- **Admin Log in**

  Admins are required to login, for them to gain entry to the administrative module where they can perform tasks related to inventory management and staff and user account management, and viewing of archived data.

- **Inventory Management**

  Admins can manage the inventory of gowns and suits, including adding the latest items and removing attires that are no longer available.

- **Sales Analysis Report**

  Admin will be able to monitor monthly sales that can help improve their sales performance.

- **Staff and User Management**

  Admins can manage staff and user accounts including registration, authentication and view their information.

- **Archive Module**

  Removed attires and staff accounts will be directed to the archive module.

Staff Module

- **Staff Log In**

  Staff members need to log in so they access the staff module where they can perform tasks related to rental processes, customer support through direct communication with customers and payment confirmation.

- **Viewing of Inventory**

  Staff members can only view the current inventory information and also monitor the stock.

- **Rental Management**

  Staffs can view and manage user rentals, including processing attire reservations, confirming bookings, handling and confirming returns.

- **Customer Support**

  Staffs can provide customer support to users, addressing inquiries, concerns, and issues that may arise during the rental process.

- **End - to - End Messaging**

  Staffs can receive direct messages from the users. In this way, admins can easily address the customers' concerns and accommodate questions, transactions and personal requests regarding renting and customized attires.

- **Payment Confirmation**

  Staffs are able to confirm if the payment made by the customers for the rentals are already received and processed.

User Module

- **User Registration**

  Customers are required to register to the system and upload a valid ID to have transaction and appointments with Amarabelliana's.

- **User Log In**

  Customers are required to log in to the system in order to browse the attires available in Amarabelliana's and maximize the usage of the features of the system.

- **Browse Catalog**

  Customers can browse through a wide range of gowns, suits, and stylistic items available for rent for various events such as weddings, proms, pageants and parties.

- **AI Visual Customization**

  Customers can utilize AI-driven tools to customize and visualize the designs of the gown and suit according to their preferences, including color, fabric, and style.

- **Personalized 3D Mannequin Selection**

  Customers can select a 3D representation of themselves as mannequins by choosing a body shape that is close to their body structure and selecting their skin tone from a range of options.

- **Drag-and-Drop Attires**

  Customers can select gowns or suits from the catalog and drag them onto their personalized 3D mannequin to visualize how the outfits would look on their body shape and skin tone.

- **Reservation and Booking**

  Customers can reserve or book their chosen gowns and suits for specific dates and events directly through the platform. They can also select on what branch they will pick up the booked attire.

- **Payment**

  Customers can make payments for rentals through integrated payment gateways. The payment options available are on-cash and GCash. For GCash payments, customers will fill up a form containing the details of the transactions made.

- **Automated and End-to-End Messaging**

  Customers can engage in both automated, for FAQs, and end-to-end messaging to communicate with Amarabelliana's staffs for queries, recommendations and raising concerns

- **Virtual Styling Consultation**

  Customers can schedule virtual consultations with Amarabelliana's professional stylists to receive personalized styling advice and recommendations.

- **Feedback and Reviews**

  Customers can provide feedback and reviews on the rented items and their overall experience with the platform.

Limitations

- **AI Generated Images Accuracy**

  The images that AI generates can be slightly different from the text description inputted by the customers. It has a possibility of generating images that are not exactly the same as the users wanted to see.

- **AI Generated Images Cannot be Dragged and Dropped**

  The generated images based on the text and description inputted by the customers cannot be dragged and dropped to the selected 3D mannequin model.

- **3D Mannequin Accuracy**

  The 3D mannequin models from range of options can be close to the customers' body shape and skin tone but not exactly the same.

- **Selected Payment Methods Available**

  System offers payment options such as GCash and on-cash payment only.

REVIEW OF RELATED LITERATURE/SYSTEMS

Related Literature

Foreign Literature

According to Vietrov (2024), generative AI technologies are highly skilled when it comes to enhancing web pages and customizing product descriptions to align to users' preferences. This personalization even extends when it comes to the customization of shopping experiences wherein AI systems analyze the user data in order to present the most relevant products and descriptions. Furthermore, technology maximizes its capabilities to virtual try-ons and demonstrations that changes how consumers interact with attires online. These AI-driven applications do not only improve user engagement but can also increase the purchasing decisions through offering more interactive and personalized shopping experience.

Ademtsu et al. (2023) highlights that in order to provide personalized apparel suggestions based on individual tastes, AI systems may analyze customer data and behavior. Providing the personal skin type, body shape, and body sizes to an AI system will generate suggestions that are suitable for the user's body. Adopting to AI system in terms of fashion business enhance the customer's decision-making and discover unique ideas based on the AI suggested.

3D Ace (2023) stated that businesses can create a more engaging experience for stakeholders by using high-quality 3D models that let them virtually touch, spin, and interact with the apparel items being exhibited. In that way, customers may easily visualize their looks and can modify their attires. It will also enhance the customer satisfaction and creativity by the help of 3D models being interactive to users. Hence, 3D technology is now used in businesses in order to visualize and showcase the ability and how their product works.

Local Literature

In the article of Vann Villegas, it was mentioned that Wang (2023) claims that the business's AI strategy demonstrates its commitment to technical innovation and ongoing development, with the goal of improving the online shopping experience for all customers. Wang added, "We continue to work closely with developers and AI experts to leverage AI's potential to usher in a new era of retail innovation". Businesses benefit significantly from AI's ability to generate a variety of ideas and suggestions for customers who are unsure or in need of new ideas. By adhering to the needs of customers, it improves customer satisfaction. Because of this, it is important to stay updated with advances in technology in order to keep ahead of the curve on changing business methods (Villegas, 2023).

According to Valenzuela (2021), renting gowns has been a practical choice for many Filipino women even for those once-in-a-lifetime events such as weddings. This type of fashion service has only become available a few years ago. However, Filipinos are starting to have a sustainable fashion choice based on their own preferences and trending styles. Despite of having a great downfall of fashion rentals during pandemic, year 2020, because of lockdowns and event cancellations, there has been a noticeable increase in rentals lately. Cit Sioson, a former editor and stylist, said that borrowing is a more economical way than shopping while still being fashionable. Hence, renting attires gives opportunity to people to wear beautiful attires which they would much likely use once or cannot afford to own one.

According to Elumbra (2019), the director of PTRI, emphasized the potential benefits of the technology, stating " You will have reduction in time for product development, reduction in fabric waste because of more efficient cutting lay out, both of which will increase your ability to produce." Due to the accurate and precise measurements made possible by 3D scanning, it is feasible to save the time needed for product creation and reduce the number of fabrics wasted during the manufacturing process (Sabillo, 2019).

Related Studies and/or Systems

Foreign Studies and/or System

The application of 3D technologies has seen to have increase with its popularity throughout different industries, including the fashion industry. 3D modeling has been recognized because of its significant developments in terms of its efficiency and effectiveness (Vrljanac et al., 2023). This technological advancement does not only optimize the design processes but also, it facilitates a better visualization and customization that aligns with the customers' preferences and their growing demands for personalized experiences in online fashion retail.

According to Brisco et al. (2023), Artificial intelligence (AI) capable of generating images from a text prompt are becoming increasingly prevalent in society and design. The general public can use their computers and mobile devices to ask a complex text-to-image AI to create an image which is in some cases indistinguishable from that which a human could create using a computer graphics package. The integration of AI solutions and machine learning algorithms do not only enhance the customer experience but also, it contributes to the growth of revenues for online fashion retailers. This integration reflects to the continuous evolution and adoption of technologies in the e-commerce.

AI refers to the simulation of human intellectual functions by machines, specifically computer programs. Because of AI algorithms, the customers are able to see and find anything that is related to their preferences that changes to the way on how the engage with online fashion platforms (Haleem, 2022).

Moreover, during the past decade, three-dimensional (3D) virtual 'try-on' was known for enhancing customer experience. It was originally design to assist the customers in terms of assessing the attires' sizes and fit it virtually. Virtual try-on helps customers filter out incorrect sizes and fits, addressing the challenge of online garment wearability, particularly in online malls. Additionally, mix-and-match services provide aesthetic appeal, making 3D virtual try-on a significant

feature of some online malls. Because of its development, it contributed in terms of boosting online sales where apparels and attires can be sold (Hwangbo et al., 2020). These innovations that exists in virtual try-on technology do offer customers an interactive and more personalized shopping experience.

Local Studies and/or System

Heather Clothing PH (2024), a well-known online clothing store nowadays that was established in 2017, offers a customization of their dresses where customers can tailor the fit and choose their preferred colors that will complement their unique style. This store aims to make their customers feel powerful and confident by wearing their personalized dress made by them.

Vestido Manila (2024), a Manila-based rental boutique, offers a convenient online rental process for its customers. Through their website, they offer wide selection of gowns and dresses that can be browsed by the customers. The boutique provides an innovative rental services like online transaction and appointment that is more accessible and convenient for the customers especially when they are far from the boutique's location.

As stated by Esguerra & Cong (2019) in their study *The Art of 3D*, 3D technology was defined as an emerging technology as the result of the advancement of both software and hardware technologies. It is often generated using a software such as 3D modeling tools, wherein it exists in a virtual way in computer. It was proved that 3D technology has been widely used in various fields such as in education, animation, movies, engineering, and even fashion. 3D models were described as a good foundation that can promote the entire virtual reality system, which is why it is considered significant to develop a 3D virtual environment.

Synthesis

The review of related literature shows the effect of rapid evolution of technology in the field of fashion industry. It also shows the significant role of 3D and artificial intelligence (AI) technologies in terms of revolutionizing the online fashion rental services, not only in the Philippines but also internationally. 3D technology has improved because of the development of software and hardware and has been used in various fields such as in education, movies, animation, engineering, and fashion. AI, on the other hand, was said to enhance the business operations and customer experiences. The capability of an AI to generate ideas and personalized recommendations improve the decision making of the customers that lead to their satisfaction and also to the growth of online fashion retail.

The emergence of fashion rental services offers a sustainable fashion preference for target customers. Local related systems mentioned are Heather Clothing PH, an online fashion retail, and Vestido Manila, an online rental boutique. These existing systems both offered a creative way to offer target customers a personalized attire and innovative fashion related services that caters the convenience of today's consumers. This has become one of the references and basis of the proponents in order to come up with the idea of the proposed system.

Moreover, the integration of 3D technology had contributed in reshaping the design processes, visualizations, and customizations within the fashion industry. The evolution of 3D modeling and emersion of virtual try-on enhances the customers' satisfaction by offering an interactive and personalized shopping experience while addressing common challenges such as in assessing size. This appears to have a similarity in terms of the role of generative AI. Generating images and showing recommendations based on text inputs provides a personalized interactions with the consumers.

Hence, the synthesis shows the interrelationship between the innovations made in technology, strategies in business, and provision of products based on consumer preferences will result to a more engaging and sustainable online fashion service in fashion retail industry. These contributed to the idea of the proponents' proposed capstone project.

The distinction of the proposed system from these related studies mentioned is that, it offers a unique rental boutique system that is infused with innovative technology such as AI and 3D. These features were combined to reform the client's operation and customer's experience in renting attires that are not available to other rental boutique systems. The proposed system has a well-designed feature wherein admin can effectively manage inventory, user and staff accounts and monitor the sales. For customers, they can browse, visualize attires, and transact smoothly while the staff can connect and assist their customers by using the offered features of the proposed system. The Amarabelliana's Gowns and Events Stylists will be able to offer customers an innovative way of attire visualization through AI. At the same time, they can select 3D mannequin that are close to their body shape and skin tone. By the help of these combined advanced technologies, the rental boutique operations of Amarabelliana's will improve its services due to awareness in terms of their customer's preferences and making the system utilize smoothly.

TECHNICAL BACKGROUND

Overview of Current Technologies to be Used in the System

Visual Studio Code (VS Code) is a flexible and easy-to-use code editor. It is made using web technologies, which makes it lightweight and fast. It is packed with useful features for programmers. It supports many programming languages and it is easy to add more features through extensions. Some helpful things it can do include helping write code faster with IntelliSense, letting find and fix bugs easily with debugging tools, and letting keep track of changes with build-in Git support, in creating Amarabelliana's rental website. In addition, there is a big library of extra features that can be added to make coding even easier. This software was used for its widely used software development across various platforms. This serves as an integrated development environment (IDE) for Next.js, Node.js, and React which offers a range of features that streamline the development process.

Monster API is a powerful AI tool used to offer various AI models such as Stable Diffusion for text-to-image generation, which is essential to the development of the system. This tool was used by the proponents to use some of the AI's function that can enable customers visualize the attire based on the texts and descriptions they inputted.

Firebase offers various services such as real-time database, authentication, cloud storage, and cloud functions. These tools help developers create, improve, and expand their applications without the need to manage the underlying infrastructure. For example, Firebase's real-time database keeps data synced across devices in real-time, while its authentication service handles user sign-ins securely. With Firebase, developers can focus on making great user experiences, deploy their apps easily, and keep track of user activity for better performance. The proponents used this software in order to create a secured database for gowns, suits and information of the customers and their rental details.

Blender is a powerful and free software used for making 3D stuff like animations, games, and architectural designs. It has lots of tools for shaping, moving, and coloring objects, as well as making them move and act like real things. Users can make detailed models, animate them, and even add cool effects. Blender can also make things look really nice with its different ways of showing stuff, like making it look real or digitize. This software was used because of its combination of affordability, versatility and of course customizability. This was used entirely in creating 3D mannequin models for one of the system's features.

Adobe Photoshop is a popular image editing software used for editing and designing digital images. It comes with lots of tools to help users change and improve pictures in different ways. With Photoshop, one can do simple things like making photos look better, or more complicated tasks like creating graphics for websites or artwork. It has easy-to-use menus and buttons, and some of its main features include layers, which allow working on different parts of an image separately, selection tools for picking out specific areas, and filters for adding special effects. Photoshop is used by photographers, designers, and artists for editing photos, creating graphics, and even making digital paintings. This is where the pictures of gowns and suits are edited which will be used for the drag and drop feature 3D model that has been created.

MediBang Paint Pro is a free software for drawing and making comics. It is easy to use and has lots of tools for drawing pictures, comics, and manga. Different brushes, pens, and textures can be used to make art look amazing. It has features like layers, filters, and guides to help create awesome drawings. Artwork can be worked on with other artist because it saves work in the cloud and allows sharing with others. This software enabled the proponents to draw various references of body shapes for the 3D models to be used in the system.

Calendar of Activities

The calendar of activities is used to determine and monitor the progress sequence in the capstone project. It outlines specific tasks and their deadlines to be completed throughout the capstone project and system development. The proponents used a Gantt chart to have an organized visual representation of the project timeline.

In the second week of February, the proponents were instructed to create 10 title proposals. They started brainstorming until the third week of February, formulated questions in the third week, went to target clients to discuss their system from the third week to the fourth week, and prepared their proposed titles from the last week of February until the first week of March.

After weeks of preparation for title proposal, the capstone coordinator conducted a title defense in the first week of March, and one of their proposed titles, which is about a rental boutique, was chosen. After the title defense, the group started creating questionnaires and went to meet and discuss the system with their client in the first week. They interviewed them, listed down the important details and problems of their existing business. After learning about their issues and desires for their business, the proponents started brainstorming on how to develop the system and how they will improve the business with the help of their system from the second week of March until the third week of March.

In the fourth week of March, the proponents started their documentation and began writing Chapter 1, which continued until the second week of April. The proponents began creating the system, starting with UI, in the first week of April. After that, they started writing Chapter 2 from the third week of April until the first week of May. Following that, they started writing Chapter 3 from the first week until the second week of May. Chapter 4 was created from third week of May and finalized in first week of June. The creation of 3D Mannequin Models started in the last week of April and is currently on-going.

Gantt Chart of Activities

The Gantt chart presents the summary of activities. Listed are the activities and opposite them are their duration or periods of execution.

MONTH / ACTIVITY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
A1. TITLE PROPOSAL PREPARATION										
A1.1 Brainstorming										
A1.2 Formulating Questionnaires										
A1.3 Interview with Possible Clients										
A1.4 Preparation for the Presentation of Proposed Titles										
A2. SYSTEM PLANNING										
A2.1 Approval of Proposed Title										
A2.2 Formulating Questionnaires										
A2.3 Interview with the Client										
A2.4 Brainstorming										
A3. DOCUMENTATION										
A3.1 Working on Chapter 1										
A3.2 Working on Chapter 2										
A3.3 Working on Chapter 3										
A3.4 Working on Chapter 4										
A4. DEVELOPING PHASE										
A4.1 Making 3D Mannequin Models										
A4.2 Creating the System										

Table 1

Resources

Hardware	
Desktop Computer	
Central Processing Unit (CPU)	AMD Ryzen 5 3600g @3.60Hz
Random Access Memory (RAM)	Trident 16GB DDR4 2600Mhz
Storage	1TB SSD + 500GB HDD
Graphics	AMD Radeon RX 560
Laptop	
Central Processing Unit (CPU)	Intel(R) Core (TM) i3-10110U @2.10GHz
Random Access Memory (RAM)	16GB DDR4 8GB LPDDR4X
Storage	256GB/ 512GBNVMe PCIe SSD
Graphics	Intel®Iris®Xe Graphics

Table 2

Software	
Operating System (OS)	Windows 11 Home 64-bit
Web Browser	Google Chrome on Windows 64-bit
Visual Studio Code	Version 1.89.1
Blender	Version 4.1.0
Adobe Photoshop	Version 25.7
Firebase	Version 13.7.4
MediBang Paint Pro	Version 29.1 (64-bit)

Table 3

METHODOLOGY

Agile Methodology

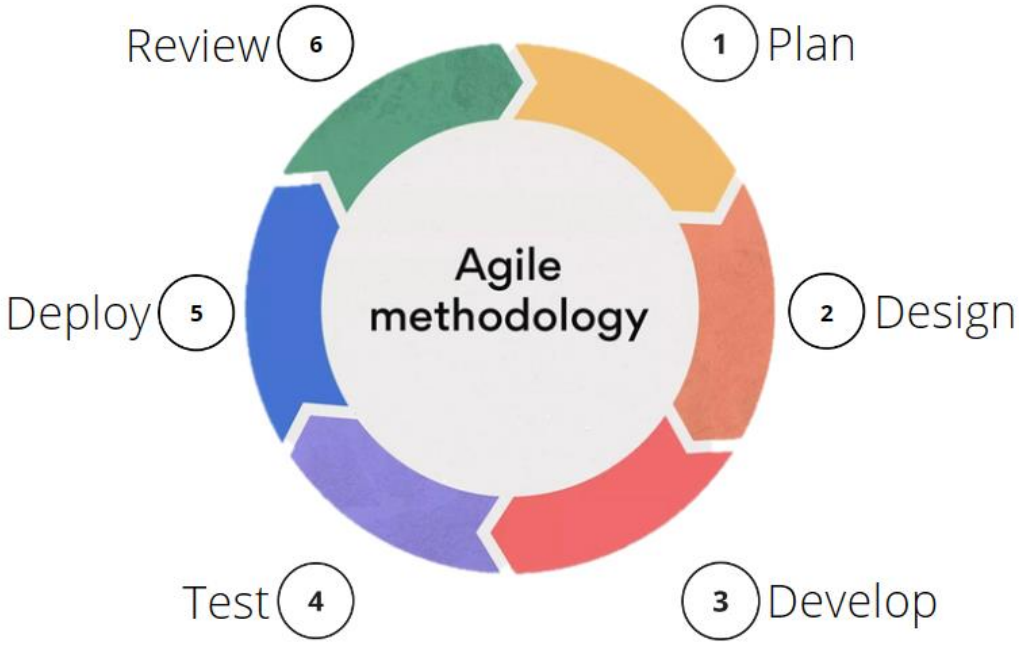

Figure 1

This methodology makes the system development faster as it breaks down the tasks from large task to small tasks. It aids the developers to do their system faster as it enables them to work collaboratively by dividing and assigning tasks to each member and also by maintaining great communication with the client. Additionally, it is flexible and adaptable as the development process is iterative and its requirements and methods quickly changes. The system continuously improves as the new requirements are being followed and issues are getting resolved immediately.

- **Plan** – The proponents should gather for brainstorming and discuss it with the client by determining their desires and expectations in this system. Also, analyzing the problems and creating strategies to mitigate and prevent those possible outcomes. By doing this step, the proponents can identify the objectives to successfully make the system.

- **Design** – After analyzing the problems and solutions of the project, it is time for the proponents to think about the design of the system. They will be visualizing the interface of the system and input the essential features that will be efficient for the users.

- **Develop** – This is where the system should be created as planning and designing are already defined. The developers will start to create the system's functions and interface by writing and running codes in a trial-and-error basis to optimize the system.

- **Test** – Developers must test the created system if it is works successfully and identify if the requirements have been met. If there are some issues or defects identified, it should be able to fix and resolve it immediately to prevent future problems.

- **Deploy** – When the system is running successfully and already complete, the developers should release the system to its target users for utilization.

- **Review** – As the system is already released, it is important for the developers to check and maintain the system. They should be able to create updates and improve functionality of the system, since it is iterative. Additionally, they should conduct feedbacks to identify the suggestions and issues of the users regarding to the system.

By following this methodology, the proponents will successfully make the system as the process of Agile methodology is suitable for their project because it focuses on the user's needs and expectations and also flexible for future changes regarding to its advancement features.

Requirements Analysis

The requirement analysis is a process where the proponents need to understand and document the specific requirements, set objectives, learn how the system will function, and determine how it will address and prevent potential problems. It is important to meet these requirements as Admins, Staff and Users are the people who will be able to use the functionality of the system.

The system must meet the standards by offering a well-designed and responsive website for the target users. This will enable the management of Amarabelliana's to utilize the system effectively, as the admin can manage the stocks, inventory, and handle the staff and user accounts. Staff on the other hand, will be able to efficiently use the system in terms of handling customer rentals, connecting with the customers using the end-to-end messaging and virtual styling consultations, and confirm payments. Lastly, users will be able to browse the available attires in the system seamlessly, with the help of AI visualization and 3D mannequin models, without difficulty of using it.

The two advancement features, AI and 3D features, are the most highlighted among all the features in this capstone project as it integrates cutting-edge technology into the rental boutique service. This will eventually contribute to the customers' rental decision making regarding the attires they desire to rent. This system is a multiplatform where it can be accessed in browser. Meaning, customers are able to use the system using mobile devices and personal computers.

This capstone project aims to innovate the rental boutique service of Amarabelliana's in order to improve and streamline their operations. This innovation is expected to increase customer satisfaction and growth of their business.

Requirements Documentation

The capstone project aims to design and develop a systematic rental boutique system to address the needs and problems of Amarabelliana’s Gowns and Events Stylist and their customers by maximizing the usage of technology.

Upon having meetings with the client, the proponents provide a clear understanding of the system's features and functionalities, ensuring alignment with the client's expectations and needs.

During the meeting, the client requested a payment processing within the system itself. Also, providing a user authentication wherein customers will register on the website by uploading their valid ID in order to verify and also to maximize the customer module’s functionality, specifically making transactions. The client also requested for a module dedicated to admin and staffs to ensure a systematic operation.

Furthermore, the system will have a database to store and manage the inventory of gowns and suits, and view the customer information of the boutique. The client also desires to enhance their customer satisfaction so they agreed to the proposed AI customization that can show a visual representation of the customer’s design preferences.

The features that the system should have will be designed in order to improve customer engagement, streamline rental processes, and raise a positive experience for all users.

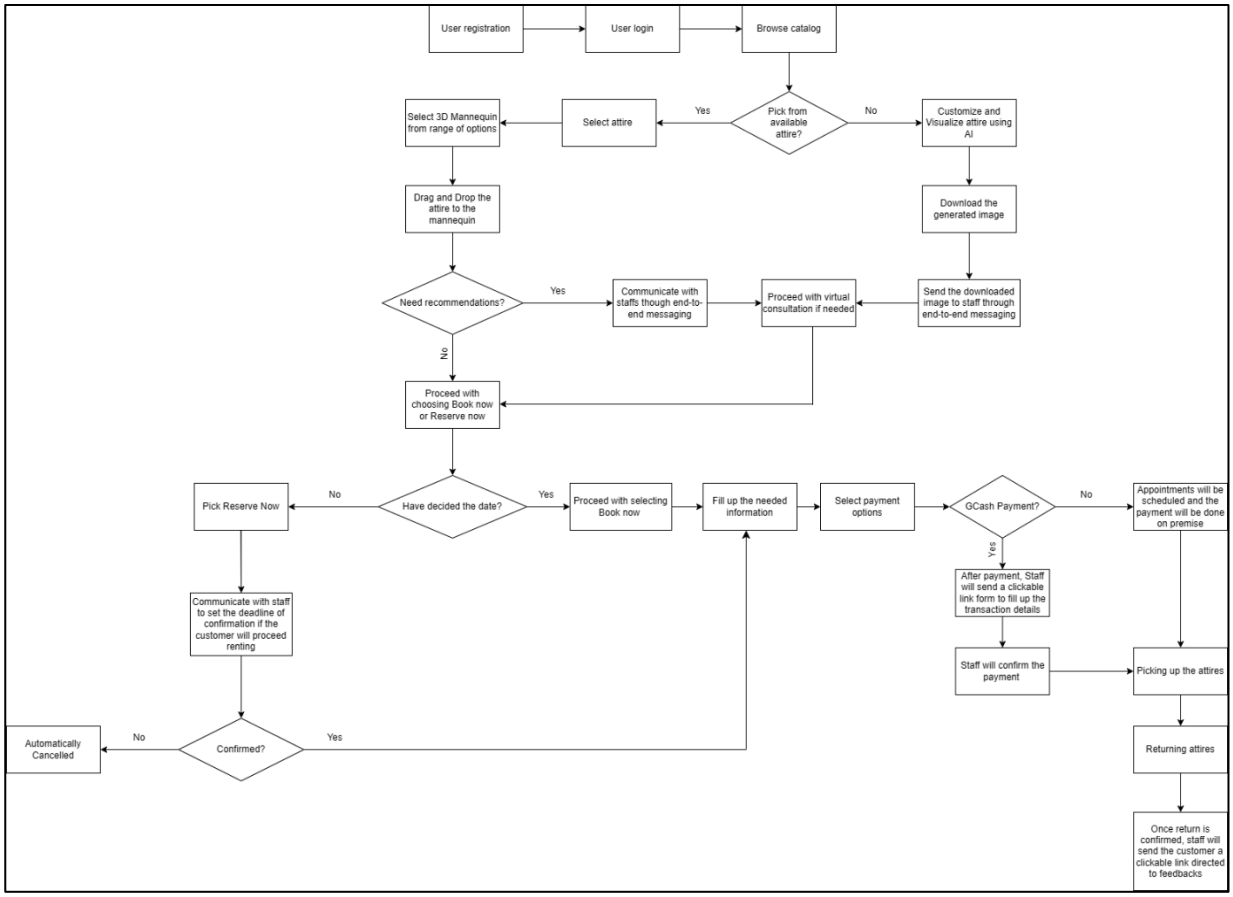

Figure 2 Flowchart for Customer Panel

Design of Software, System, Product, and/or Processes

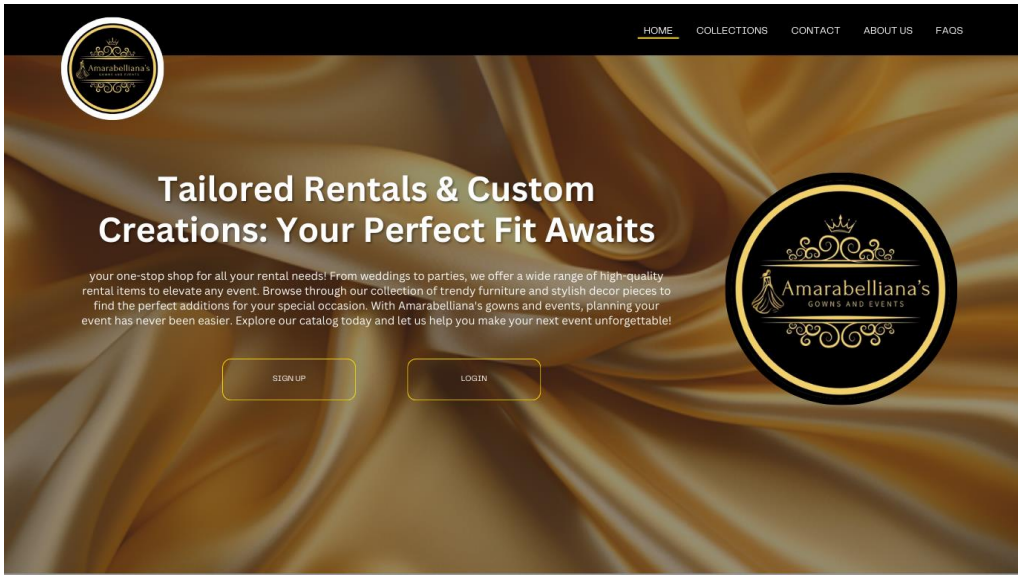

Figure 3 Home Page

This home page will serve as an overview and introduction of Amarabelliana's Gown and Events Stylist to its target customers. It also serves as the customers' guide through the boutique's website. Additionally, it reflects the brand identity and offers essential information and access points for log in and registration.

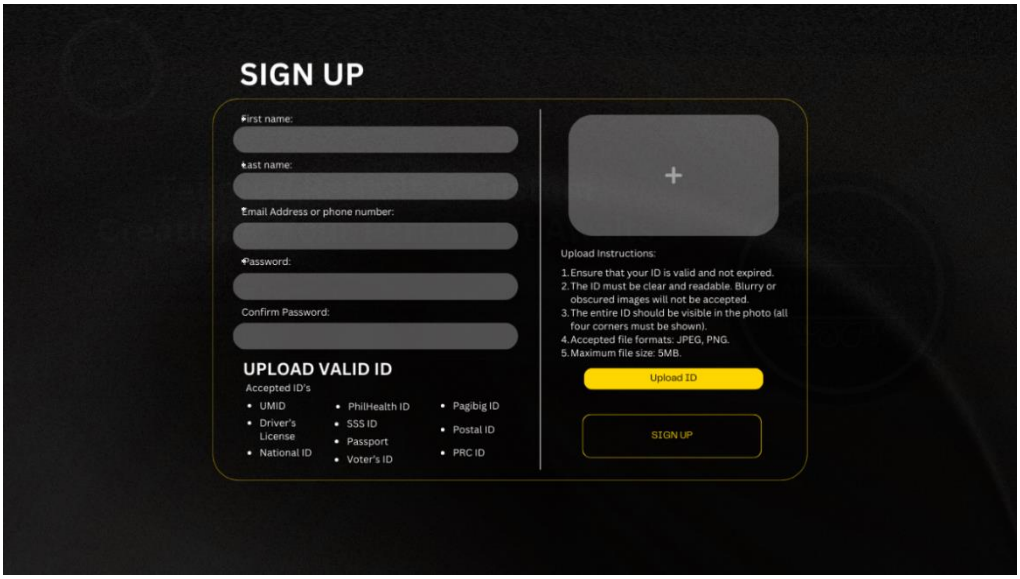

Figure 4 User Registration

This user registration page will enable customers to register their account to Amarabelliana's Gown and Events Stylist's website in order to gain access to the system.

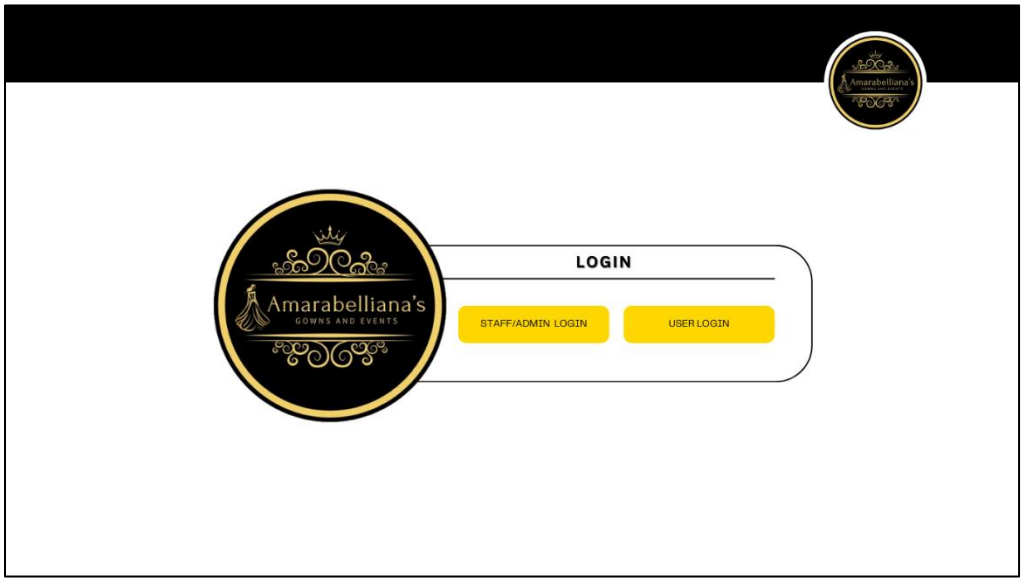

Figure 5 Login Selection (Admin/Staffs and User)

An interface where admin, staffs, and users can choose their login options for proper access. Staffs and users have their own respective accounts and the owner of Amarabelliana's Gown and Events Stylist can only access the admin account, which allows admin to manage both staffs and users accounts.

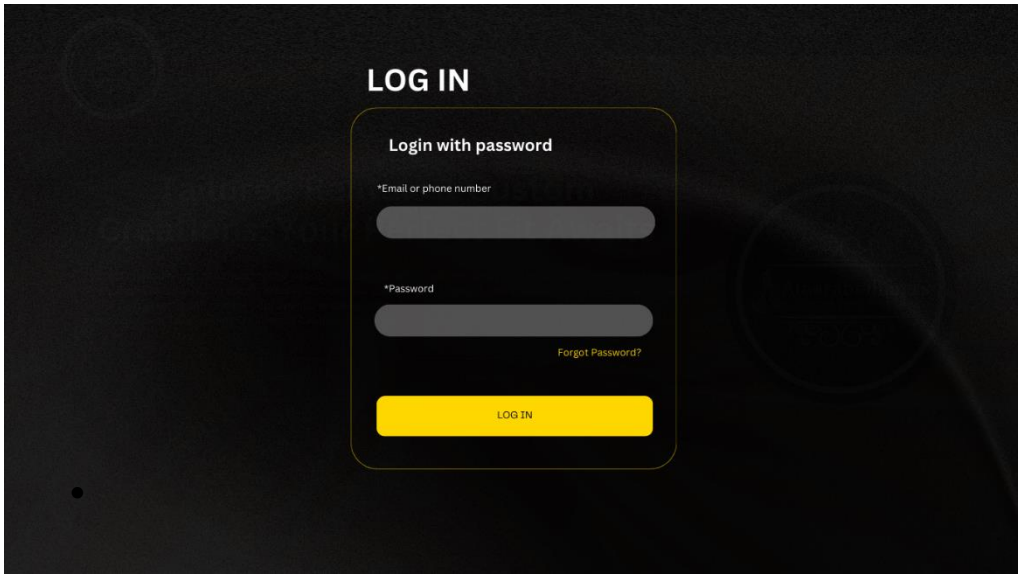

Figure 6 User Login Page

Users can log in their registered account and maximizes usage of the website's functionalities based on their level of access.

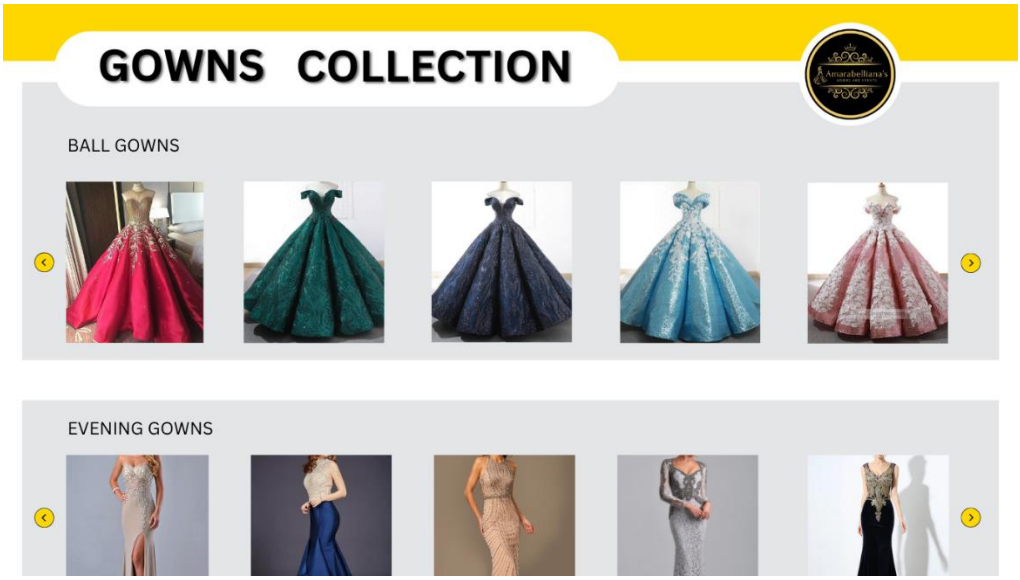

Figure 7 Collection Catalog Module (Gowns)

Users can browse gowns from the collection catalog that are sorted based on gown types. It can be viewed without logging in.

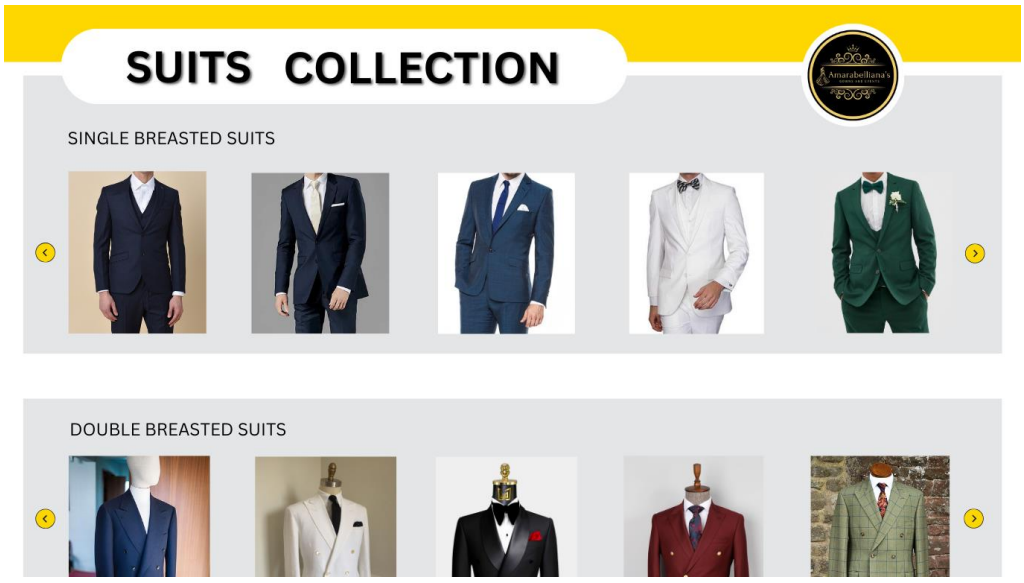

Figure 8 Collection Catalog Module (Suits)

Users can browse desired suits from the collection catalog that are sorted based on suit types. It also can be viewed without logging in.

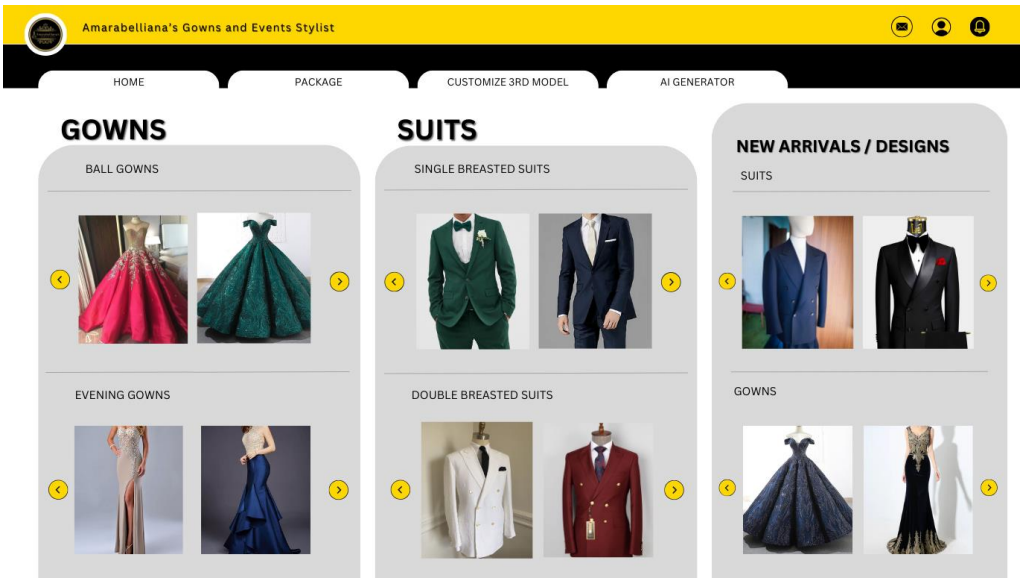

Figure 9 Main Dashboard (Users)

Once the users successfully logged in, they can browse and select desired attires from the catalog that are sorted based on attire types. This will serve as an interface where users can access personalized content, view profiles, and navigate various features with ease that the system offers.

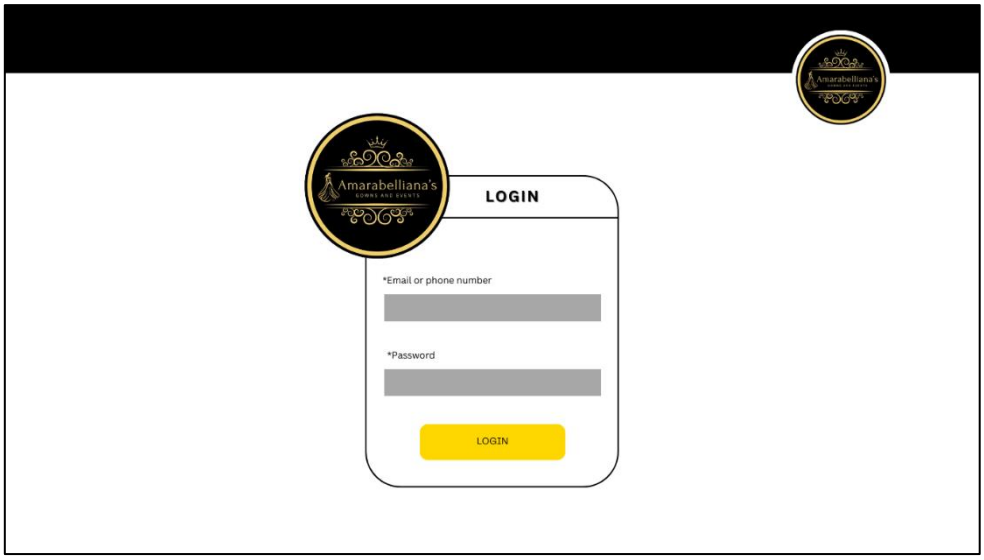

Figure 10 Login Page (Admin and Staffs)

A secure page for admin and staff that enables them to enter their credentials and access their respective dashboard.

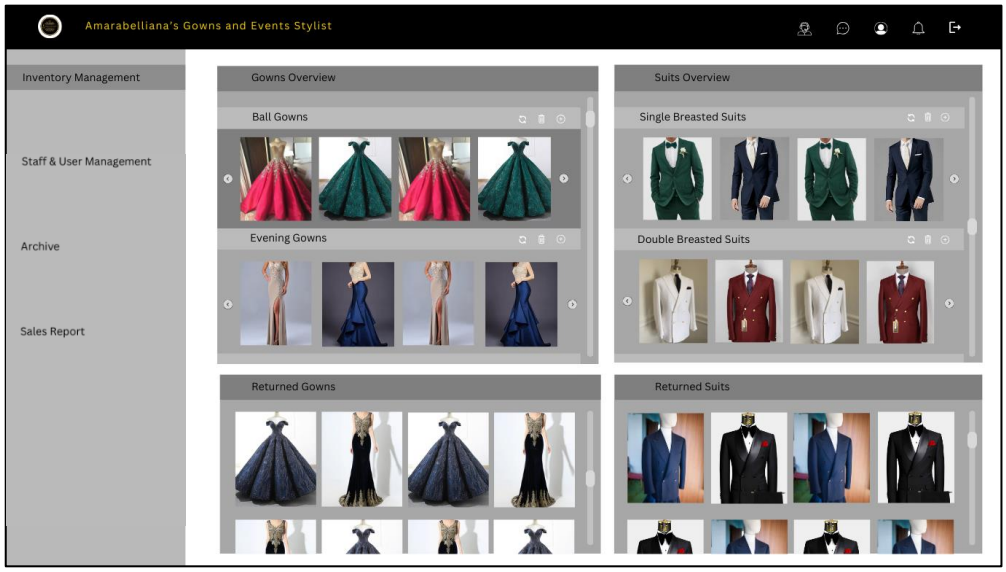

Figure 11 Main Dashboard (Admin)

A comprehensive dashboard that enables admin to manage staffs and users, monitor and manage the inventory effectively.

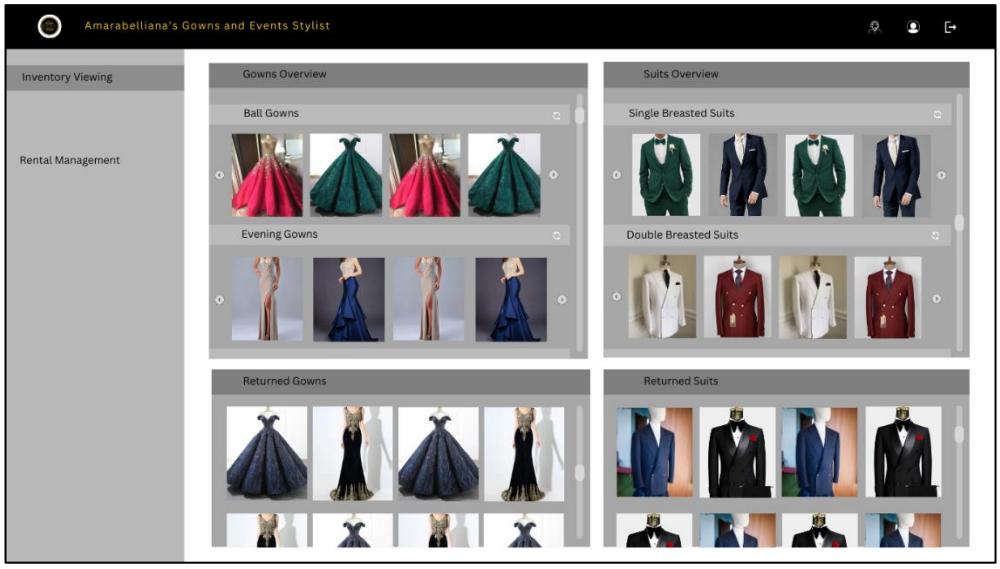

Figure 12 Main Dashboard (Staff)

Staffs will be able to manage the rentals and accommodate customers effectively.

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APPENDICES

APPENDIX A. RESOURCE PERSONS

APPENDIX B. PERSONAL TECHNICAL VITAE

Curriculum Vitae of

FIONA MIKAELA S. EVANGELISTA

Garcia Compound, Miramonte Park Avenue, Soldiers Hills III, North Caloocan City
fiona.evangelista18@gmail.com
09297767929

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	2021 – Present	STI College San Jose Del Monte
Vocational/Technical	2019 – 2021	STI College San Jose Del Monte
High School	2015- 2019	Our Lord of Mercy School of Caloocan, Inc.
Elementary	2009 – 2015	Our Lord of Mercy School of Caloocan, Inc. (Grade 3 to Grade 6) Our Lady of the Holy Rosary Academy (Grade 1 to Grade 2)

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
N/A	N/A	N/A

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
2023 - 2024	Intellitech	P.R.O
2022 - 2023	Student Executive Counsil	Vice President
2021 - 2023	Intellitech	Member

SKILLS

SKILLS	Level of Competency	Date Acquired
Web Development	Beginner	2024
3D Modeling	Beginner	2024
Digital Illustration	Beginner	2019
English Fluency	Proficient	2004

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
2023	SAP Business One Training Course
2022	Microsoft Skilling Summit 2022
2022	Voter's Education Webinar
2021	Time and Stress Vitamins: Time Management and Coping with Stress Seminar

Curriculum Vitae of

MARK ANGELO T. FAJELA

1191 Saint John Street, Sampaguita, Malaria, Caloocan City
fajelamarkangelo@gmail.com
09054560253

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	2021 - Present	STI College San Jose Del Monte
Vocational/Technical	2019 - 2021	Immaculada Conception College
High School	2015 - 2019	Manuel Luis Quezon High School
Elementary	2009 - 2015	Manuel Luis Quezon Elementary School

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
2024	Member	Sampaguita Youth Organization (SYO)

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
2021 - Present	Intellitech	Member

SKILLS

SKILLS	Level of Competency	Date Acquired
Programming	Beginner	2021
Web Development	Beginner	2019
Photo Editing (Adobe Lightroom)	Beginner	2019

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
2023	SAP Business One Training Course

Curriculum Vitae of

BIANCA NICOLE A. OTILLA

Block 12 Lot 42 Phase 2B Ciudad Real, San Jose del Monte, Bulacan
biancaotilla2003@gmail.com
09167763813

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	2021 – Present	STI San Jose del Monte
Vocational/Technical	2019 – 2021	Lagro High School
High School	2015 - 2019	Lagro High School (Grade 9 – 10)
		Our Lord of Mercy School (Grade 7 – 8)
Elementary	2009 – 2015	Siena College of San Jose (Grade 6)
		Our Lady of the Holy Rosary School (Grade 5)
		Our Lord of Mercy School (Grade 4)
		Immaculate Heart of Mary School (Grade 1 – 3)

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
N/A	N/A	N/A

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
2021 – Present	Intellitech	Member

SKILLS

SKILLS	Level of Competency	Date Acquired
Programming Languages	Beginner	2021
Software Troubleshooting	Beginner	2021
Microsoft Office (Word, PowerPoint, Excel)	Intermediate	2019

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
2023	SAP Business One Training Course

Curriculum Vitae of

JEROME A. SHURAFA

2062 St. Joseph, Caloocan City
jashiroshurafa@gmail.com
09212113351

EDUCATIONAL BACKGROUND

Level	Inclusive Dates	Name of school/ Institution
Tertiary	2021-Present	STI College San Jose Del Monte
Vocational/Technical	2018-2020	EMCEF
High School	2015-2018	Manuel Luis Quezon (MLQ)
Elementary	2008-2015	Tala Elementary School

PROFESSIONAL OR VOLUNTEER EXPERIENCE

Inclusive Dates	Nature of Experience/ Job Title	Name and Address of Company or Organization
N/A	N/A	N/A

AFFILIATIONS

Inclusive Dates	Name of Organization	Position
2021 - Present	Intellitech	Member

SKILLS

SKILLS	Level of Competency	Date Acquired
Trouble Shooting	Beginner	2021-2024
Web Development	Beginner	2024
Programming	Beginner	2024
English Fluency	Beginner	2014

TRAININGS, SEMINARS, OR WORKSHOPS ATTENDED

Inclusive Dates	Title of Training, Seminar, or Workshop
2023	SAP Business One Training Course