Design And Development Of A Bespoke Tailor's Aid To Tackle Fashion Returns And Waste

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Abstract: User designed a bespoke tailor's aid device by conducting surveys, researching existing devices and market trends, exploring measuring apps, creating concepts, and developing a working prototype. The aim was to tackle fashion returns and waste by focusing on accuracy, portability, and unique design, resulting in a device that addresses multiple industries' needs for precise and user-friendly body measurements.

Keywords – **Tailor's aid, Accuracy, Body measurement device, Fashion industry**

I. INTRODUCTION

In the intersection of fashion and health, accurate body measurement tools are crucial for personalized fit and style, aiding in bespoke clothing production, online shopping accuracy, fitness tracking, and nutritional guidance. However, challenges like accuracy issues, usability difficulties, privacy concerns, integration complexities, and high costs hinder their widespread adoption. To address these, improvements in accuracy, user interfaces, data security, compatibility, affordability, and additional fitness features are essential. Our aim is to design a bespoke tailor's aid that prioritizes accuracy, compatibility, and portability through advanced sensors, user-friendly design, robust data security, interoperability standards, compactness, and affordability.

II. LITERATURE REVIEW

1) Few papers were reviewed, to understand about body measurement technologies and methodologies. The papers collectively explore advancements in technology aimed at improving the online clothing shopping experience and reducing returns. They discuss the challenges associated with garment sizing issues, such as discomfort and high return rates, and propose innovative solutions to address these concerns. From smartphone-based garment measurement systems to 3D body scanners, the research emphasizes the potential of technology in providing accurate size recommendations, virtual fittings, and personalized shopping experiences. Additionally, efforts towards standardization in 3D body scanning highlight the growing importance of establishing industry-wide guidelines. Ultimately, these advancements hold promise for revolutionizing the online clothing shopping landscape, offering consumers greater convenience, accuracy, and satisfaction.

2) Ethnographic study was done by visiting stores like Raymond's and Louis Phillipe. The main findings after the conversation with manager and tailor was, accuracy and ease of use should be key feature. Subjectiveness is the key as that is what matters mostly in case of clothing. Adding more interesting features to this will make it more attractive and increase the market price.

3) An online survey was also conducted among youngsters to understand whether they are aware of such products in the market. Also, what all features they expect to be in it. Understanding the users need is a key point as users' comfort is important for clothing.

4) Feedback was also taken from a Design professional called Junaid S.A.A. He has designed apps related to clothing measurement and he shared what factors to consider while designing such devices and apps.

III. DATA COLLECTION AND ANALYSIS

Data from multiple sources were collected and examined to closely analyze the tailor's aid. To gain more knowledge and insight about this device, various methods were employed to understand customer needs, preferences, and issues they face. These methods included market research, surveys, and observations. After thorough studies and analysis, conclusions were drawn to identify enhancements that could make the product stand out in the market.

IV. CONCEPT DEVELOPMENT

Keeping in mind all the existing products, something new and innovative had to be designed. Factors like compatibility, portability, accuracy and elegance were considered while exploring new solutions. Five concepts were made and the best out of it was selected considering the above criteria. Figure 1,2 and 3 are drawn by taking inspirations from nature and futuristic elements. Different sketches and 3D models were developed later. The concept that was finalized, began with the idea of a jewellery box, which later evolved into an octagonal shape inspired by a futuristic device. The cuts and angles give it a sleek, modern appearance. The combination of sleek design and traditional elements creates a unique blend of modern and classic themes. Traditional elements mean the device can be customized and made with wood or even make it modern by designing it with plastic or metallic finish.

For running the device, a user interface has to be provided and already many measuring apps are existing in the market. After taking an existing app, few new features were added, making it unique and multifunctional. This device is useful for fashion designers as well as fitness enthusiasts.
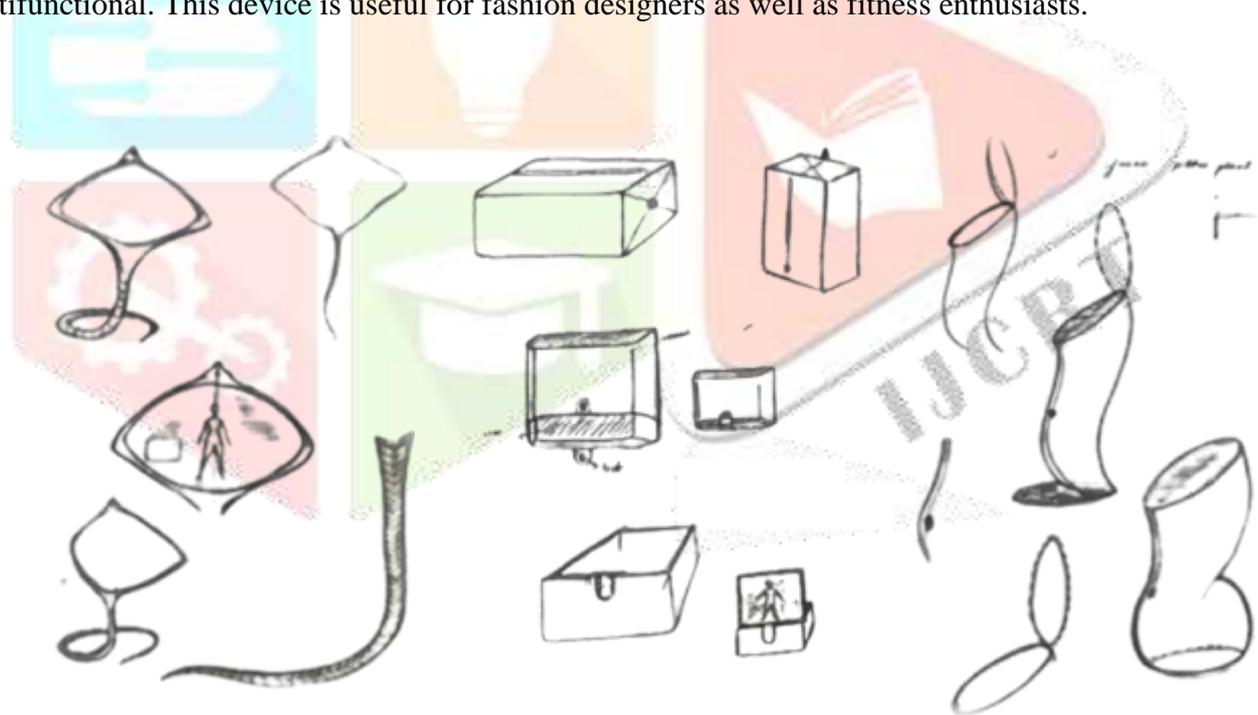

Figure 1 Explorative sketch 1   Figure 2 Explorative sketch 2   Figure 3 Explorative sketch 3
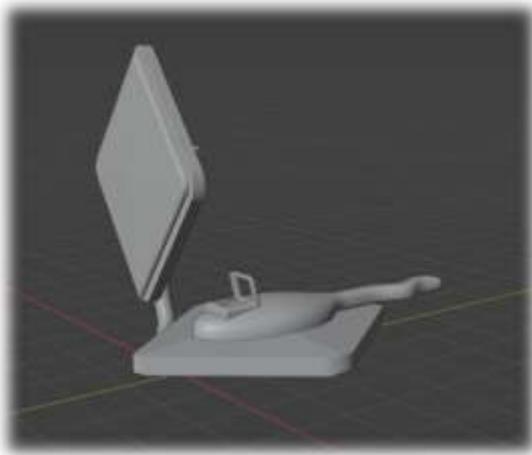
Figure 4 3D model of sketch 1

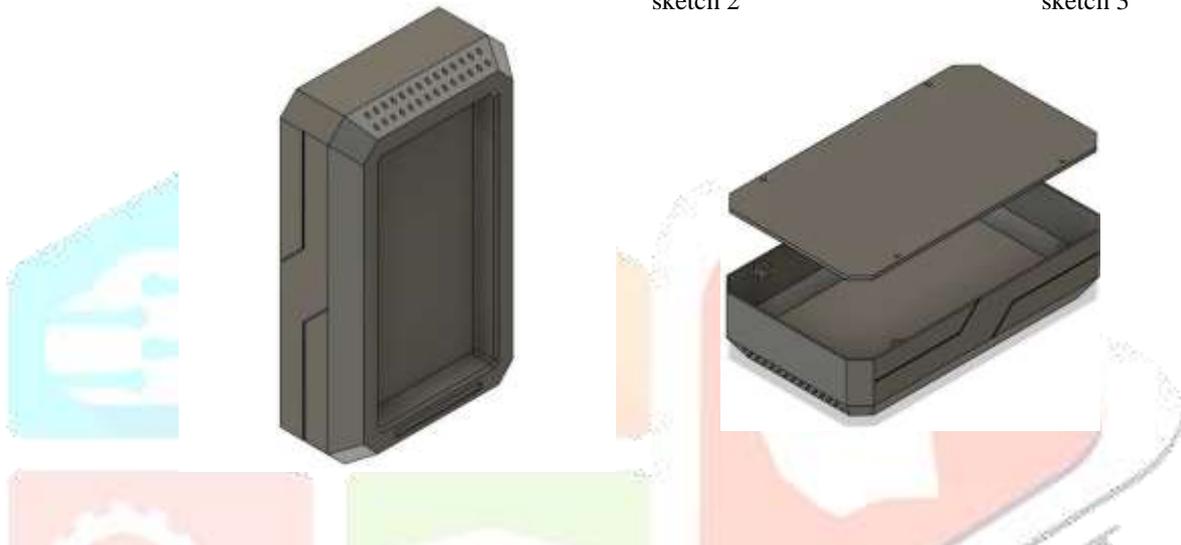Figure 5 3D model of sketch 2

Figure 6 3D model of sketch 3

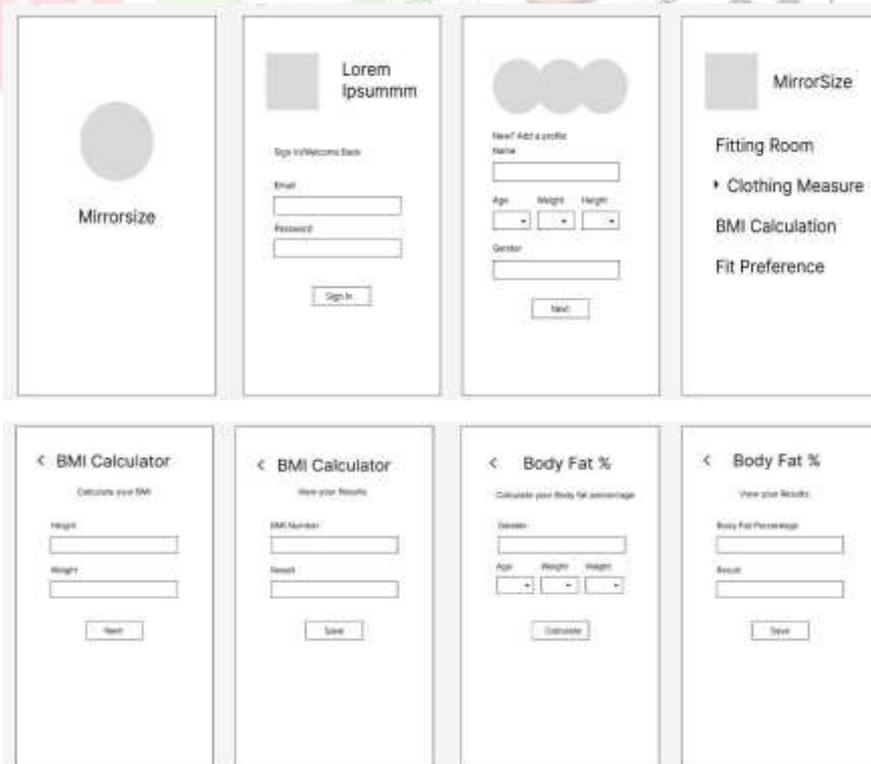Figure 7 3D model of final concept

Figure 8 3D model showing back panel

Figure 9 Wireframes for new app

V.   DETAILED EXPLANATION OF FINAL CONCEPT

1. The concept is based on a futuristic and minimal design. The main purpose of the tailor's aid is to take measurements, and to achieve this, a vertical LED screen is provided, designed for optimal balance and ease of use. Speakers were added at the top to ensure commands are heard clearly, and the bottom part features a control panel for user interaction. The color scheme of black and gold gives it a luxurious and elegant appearance.

   Highlights of the concept are camera with built – in laser sensor, speakers for accuracy, LED screen, space efficiency

   and multifunctional like it can take body measurement as well as fitness check.

   ● Automatic height adjustable camera
   Automatic height adjustable camera technology allows cameras to adjust their height and angle automatically to capture optimal shots. Utilizing sensors and motorized mechanisms, the system can detect the subject's position and make real-time adjustments for better framing and focus. This technology enhances convenience and efficiency, especially in settings like video conferencing, live streaming, and surveillance. It ensures consistent image quality without manual intervention.

   ● Speakers
   Speakers are provided at the top of the body measurement device, offering clear and direct audio feedback to users. Positioned strategically, these speakers deliver real-time instructions and confirmations during the measurement process, enhancing user interaction and accuracy. This top- mounted placement ensures that audio cues are easily heard, contributing to a more efficient and user-friendly experience.

   ● LED screen
   The body measurement device features an LED screen display that provides real-time visual feedback and data to users. This display shows measurements, instructions, and alerts, ensuring clarity and precision throughout the process. Positioned for easy visibility, the LED screen enhances user interaction by offering intuitive, on-screen guidance and immediate results, making the measurement process more efficient and user-friendly. Also, it helps in fitness like giving the correct fat percentage, BMI etc.

   ● Space efficient
   The body measurement device is designed with space efficiency in mind, featuring a compact and streamlined form that minimizes bulk. Its sleek design allows for easy storage and portability, making it ideal for use in various environments, from small shops to large houses. The integration of essential components, such as speakers and an LED display, into a single, cohesive unit further enhances its space-saving capabilities without compromising functionality or user experience.
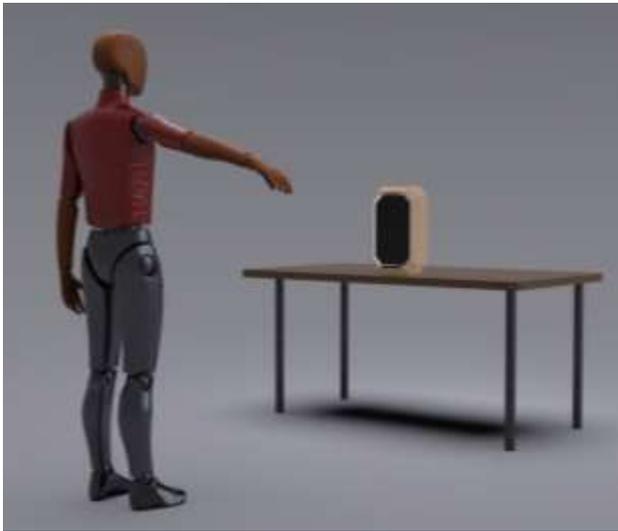
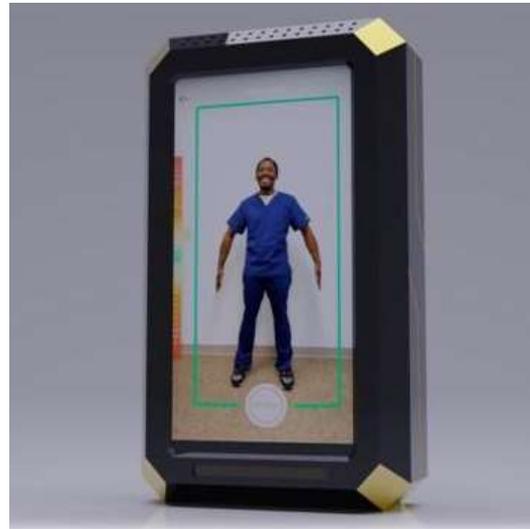Figure 10 How measurement is taken   Figure 11 Product demo

Figure 12 Rendered final 3D model

Figure 13 Full view of rendered model

2. Features that are newly incorporated in the app other than existing:

●   Choose from fitting room, clothing measure, BMI calculation, body fat percentage and fit preference.

●   Using fitting room, the user will be guided to an app that they choose like Myntra, Ajio etc. They can choose the dress according to their interest and then proceed.

●   Using fit preference, the user can select whether they want slim fit or regular and save it for future use.

●   All the data will be saved in different profiles, which can be used whenever required by the user.

●   For fitness enthusiasts and health tracking individuals, features like BMI calculation and body fat percentage would be helpful.

● The data will be stored and weekly updates can be done, to keep in track.

VI. PHYSICAL PROTOTYPING AND USER VALIDATION

1. As seen in Figure 14, the working prototype was 3D printed using the material ABS plastic with SLA
   (Stereolithography) method. Before making the final model, few mockups were made using sun board and MDF
   sheets. By making these mockups, actual proportions were understood and a final model was 3D printed.
2. The reviewer offered their comprehensive insights on the product, meticulously analysing its aesthetic
   appeal, functionality and overall look. These replies derive from true experiences with trail with the product,
   offering an authentic review. Mixed responses were received like designers feel this product has a lot of hope
   in future whereas others feel it's an above average product which below average can't afford. Users felt it user
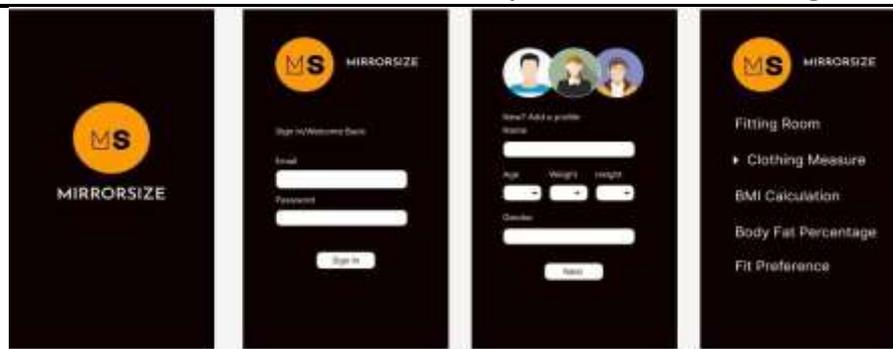   friendly and handy.

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Figure 14 Physical model 3D printed

Figure 16 Physical working model

Figure 15 Physical model 3D printed – top view

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Figure 17 New screens designed for the app

Figure 18 New screens designed for choosing fit preferences

VII.   CONCLUSION

This project resulted in a Tailor's aid that proves equally useful for fashion designers, high class individuals and fitness enthusiasts. The device has features, not just related to fashion but also fitness, as this could solve a major issue faced in the current online shopping industry. The app designed collaborates with other apps such as Myntra, where your virtual try-on happens, making shopping easier. The measurements taken will be saved in the device and can be used again.

We explored how current devices work, features to be added and drawbacks present. Surveys were conducted in person as well as online and research papers were gathered to obtain data. Existing product study and market trends were done to get an idea for a new design. The final concept was selected based on key features like accuracy, portability and uniqueness of design.

Altogether, this tailor's aid is helpful in the coming future as it solves one of the major concerns in the clothing industry where clothing is preferred according to both comfort and need.

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