E-PROCEEDINGS

INTERNATIONAL TINKER INNOVATION & ENTREPRENEURSHIP CHALLENGE (i-TIEC 2025)

"Fostering a Culture of Innovation and Entrepreneurial Excellence"

23 January 2025
PTDI, UiTM Cawangan Johor
Kampus Pasir Gudang

ORGANIZED BY:

Electrical Engineering Studies, College of Engineering
Universiti Teknologi MARA (UiTM) Cawangan Johor
Kampus Pasir Gudang
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PREFACE

It is with great pleasure that we present the e-proceedings of International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), which compiles the extended abstracts submitted to the International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), held on 23 January 2025 at **PTDI, Universiti Teknologi MARA (UiTM) Cawangan Johor, Kampus Pasir Gudang.** This publication serves as a valuable resource, showcasing the intellectual contributions on the invention and innovation among students, academics, researchers, and professionals.

The International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), organized under the theme "Fostering a Culture of Innovation and Entrepreneurial Excellence," is designed to inspire participants at various academic levels, from secondary students to higher education students and professionals. The competition emphasizes both innovation and entrepreneurship, encouraging the development of product prototypes that address real-world problems and have clear commercialization potential. By focusing on technological and social innovations, i-TIEC 2025 highlights the importance of turning creative ideas into viable, market-ready solutions that can benefit users and society. The extended abstracts in this e-proceedings book showcase the diverse perspectives and depth of research presented during the event, reflecting the strong entrepreneurial element at its core.

We extend our sincere gratitude to the contributors for their dedication in sharing their innovation and the organizing committee for their hard work in ensuring the success of the event and this publication. We also appreciate the support of our collaborators; Mass Rapid Transit Corporation Sdn. Bhd. (MRT Corp), Universitas Labuhanbatu, Indonesia (ULB), Universitas Riau Kepulauan, Indonesia (UNRIKA) and IEEE Young Professionals Malaysia, whose contributions have been instrumental in making this event and publication possible.

We hope that this e-proceedings book will serve as a valuable reference for researchers, educators, and practitioners, inspiring further studies and collaborations in both innovation and entrepreneurship. May the knowledge shared here continue to spark new ideas and market-ready solutions, advancing our collective expertise and fostering the growth of entrepreneurial ventures.

A-SS004 - A-SS121

A-SS011: REVOLUTIONIZING FASHION RETAIL THROUGH VIRTUAL TRY-ON TECHNOLOGY

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ABSTRACT

The rapid growth of e-commerce and social commerce platform has redefined the way consumers interact with fashion. Nevertheless, the inability to imagine the real time product with actual body type remains a significant limitation, especially e-commerce and social commerce platform. This project introduces a Virtual try-on system specifically designed for clothing websites, offering an immersive and interactive experience to overcome this barrier. Utilizing an advanced VR technology, consumer can virtually "wear" their selected outfits in real time, enabling more informed purchasing decision through highly realistic visual simulations. Unlike traditional modes of shopping, this model provides a proactive approach designed to enhance consumer confidence, aligned with modern technological trends. Additionally, the VR Try-On system supports business growth and consumer satisfaction while preserving cultural traditions through innovative applications. Its uniqueness lies in its ability to adapt and improve over time, ensuring precise and reliable performance while minimizing inaccuracies. By offering an immersive Virtual Try-On system, this innovation enhances online shopping accuracy and reduces decision-making uncertainty, thereby decreasing product returns and enhancing customer satisfaction. The platform supports efficient resource usage, minimizes waste, and fosters sustainable business practices in the fashion industry. This project contributes to building a more resilient and innovative digital retail infrastructure, promoting seamless purchasing experience, and driving socio-economic in fashion sector.

Keywords: Virtual Try-On, e-commerce, social commerce, innovative, fashion

1. Product Description

This innovative digital solution is designed to transform the online shopping experience for clothing by enabling customers to virtually try on outfits in real-time. Utilizing advanced 3D modeling, and customizable virtual technology, the system generates realistic clothing representations on avatars that match users' body dimensions, including size and height. By integrating original user photos with precise measurements, the tool creates a highly accurate and personalized fit visualization, improving consumer confidence in their purchase decisions. The platform allows users to experience real-time virtual try-ons and view intricate garment details through 3D clothing models that reflect the clothing designs. Its user-friendly interface ensures seamless navigation, making it easy to integrate into

existing websites for businesses. For consumers, it provides a realistic and immersive shopping experience that significantly reduces uncertainty, minimizes return rates, and enhances satisfaction. Beyond improving user experience, this solution promotes sustainability by reducing product returns and the waste associated with packaging and logistics, contributing to more efficient resource management. **Figure 1** illustrates the flowchart of the system starting with data collection from users' photos, while **Figure 2** provides a snapshot of the VR Try-On interface as it appears on a website.

2. VR Try-On Model Flow Chart
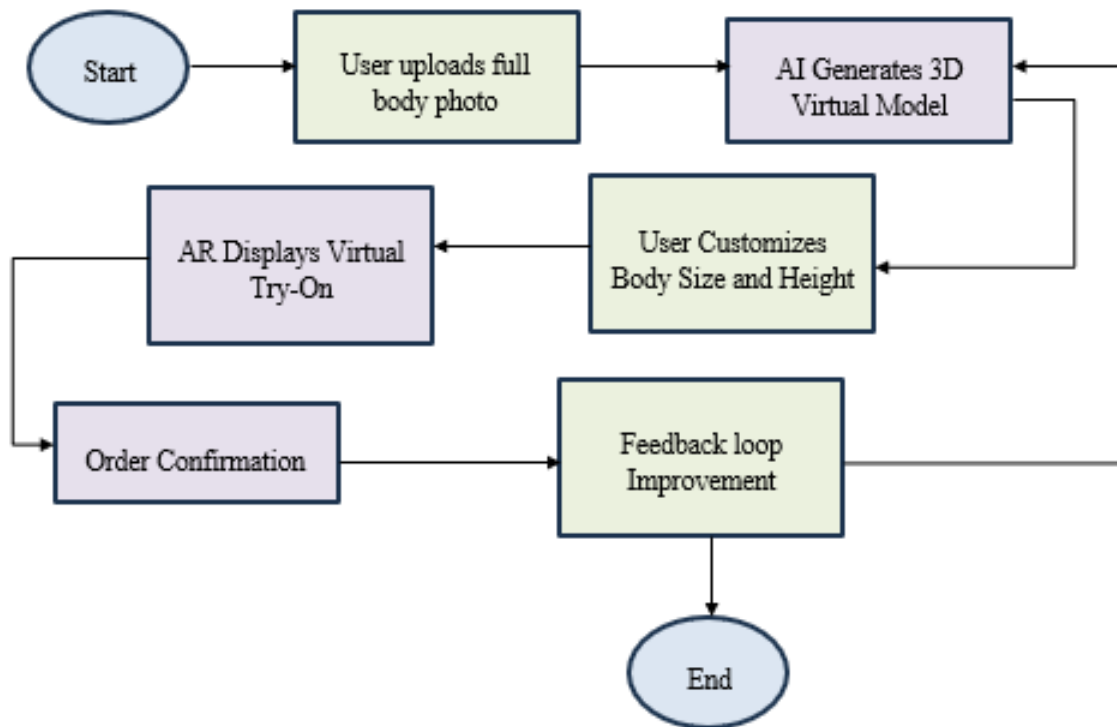
Figure 1. Model flow chart

3. Screenshots of the VR-Try on Technology from a Website
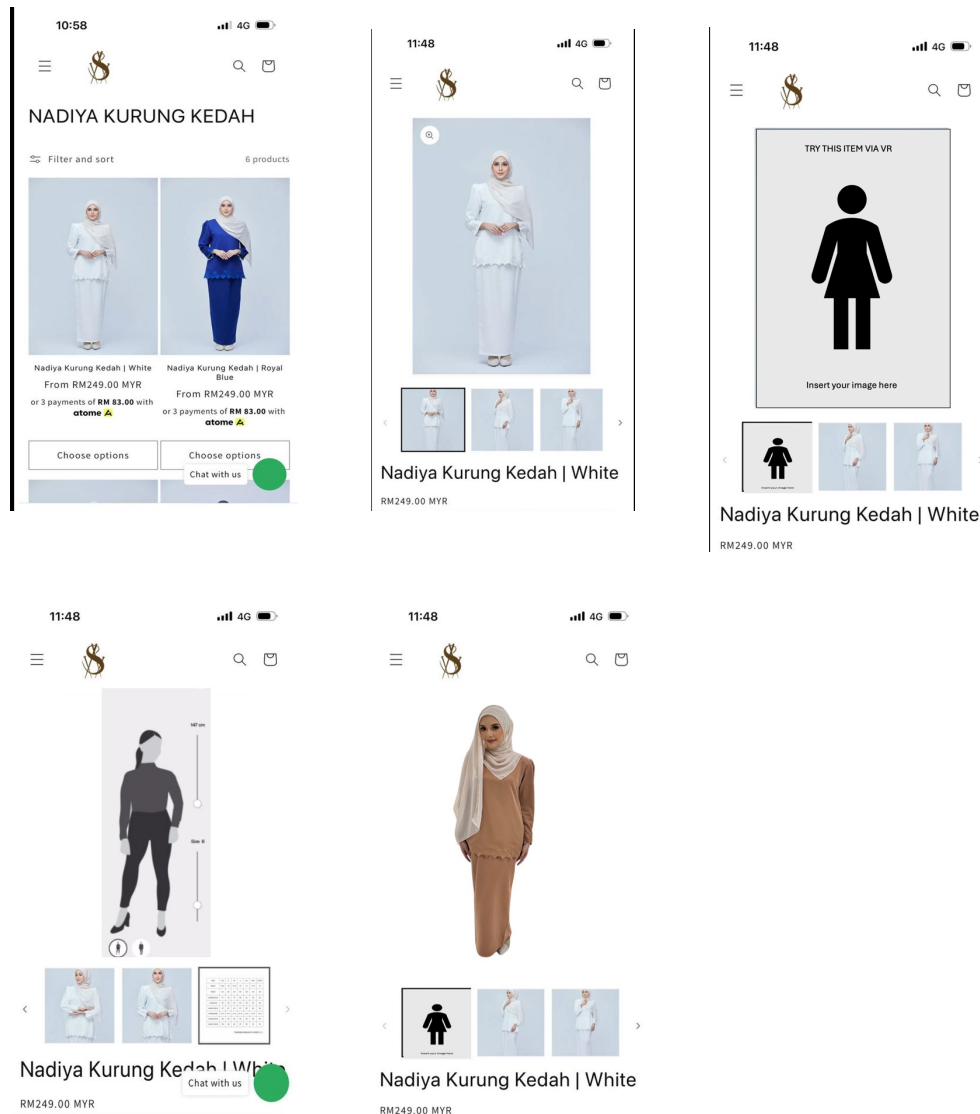
Figure 2. VR-Try on Technology from a Website

4. Novelty and uniqueness

The novelty of this project lies in its ability to integrate advanced 3D modelling and Virtual technology to address the challenges of online shopping for clothing items. Unlike static product images of size charts, this system uses customizable photos based on individual body dimension and height providing an accurate, a real time virtual trial experiences. Its adaptive nature allows the system to improve over time by learning users behaviour, and enhancing visual simulations.

5. Benefit to mankind

The Virtual Try-On System redefines the online shopping experience for clothing through the innovative use of advanced 3D modeling and VR technology. Unlike conventional approaches with static images or generic size charts, this system generates customizable avatars that accurately reflect individual body dimensions, offering an interactive and precise virtual fitting experience. Over time, the system adapts by learning user preferences, ensuring increasingly realistic simulations and reducing purchasing uncertainty. This solution benefits both consumers and businesses. For customers, it enhances confidence by allowing them to visualize garment fit and style, leading to greater satisfaction and trust when shopping online. For business owners, it minimizes return rates caused by size and fit issues, reducing costs and resource waste. By lowering packaging waste and logistics emissions, the VR Try-On System also promotes sustainability. This innovative technology bridges tradition and digital transformation, supporting cultural preservation and creating a more efficient, customer-centric retail experience.

6. Innovation and Entrepreneurial Impact

The Virtual Try-On System promotes innovation by integrating advanced 3D modeling and VR technology to transform the clothing industry. This project introduces a unique, immersive virtual fitting experience that bridges cultural heritage with digital transformation, offering a modern solution to an age-old retail challenge. By addressing online shopping limitations, the system encourages business owners, SMEs, and entrepreneurs to adopt cutting-edge technology to enhance customer satisfaction and reduce operational costs. The project contributes to a culture of entrepreneurship by empowering businesses to compete in the global e-commerce landscape. It inspires innovation within institutions and communities by showcasing the potential of technological tools to improve fashion industries. Additionally, the VR Try-On System serves as a scalable model for tech-driven businesses, encouraging startups and small enterprises to embrace sustainable, user-focused solutions. This fosters an entrepreneurial mindset, driving industry growth while promoting sustainability and digital literacy within the community.

7. Potential commercialization

The Virtual Try-On System holds significant potential for commercialization within the fashion and retail industries. Designed to address challenges in online clothing such as sizing issues and consumer uncertainty, this solution offers an adaptable platform for business owners, fashion retailers, and e-commerce businesses globally. By enabling a realistic virtual try-on experience, the system enhances customer satisfaction, reduces product return rates, and optimizes operational efficiency. The system can be commercialized as a **standalone product** for integration into existing e-commerce websites or as an **add-on service** for fashion retailers seeking a competitive edge. Its versatility allows it to cater to various market segments, including SMEs and larger fashion enterprises. Furthermore, the platform promotes sustainability by reducing reverse logistics and packaging waste, aligning with global trends for eco-friendly solutions. This innovation positions itself as a high-value

product, driving profitability while meeting the increasing demand for immersive online shopping experiences.

8. Authors' Biography

Hajar Ahmedy is Full time PhD student in UiTM Segamat from the Faculty of Business and Management. She is also a part-time Lecturer in UiTM Pasir Gudang in Management and Marketing field. With over 15 years of industrial experience, she is actively collaborating with industrial practices to create an interactive education in classroom.

Nazatul Syahira Hussein earned her Bachelor's degree in Industrial Logistics from Universiti Kuala Lumpur (UniKL) in 2019. Driven by a passion for deeper knowledge in logistics and transportation, she pursued a Master's in Transportation Planning at Universiti Teknologi Malaysia (UTM), graduating in 2021. Following her postgraduate studies, she began her academic career as a lecturer at UniKL, where she taught for two years. In 2023, she joined Universiti Teknologi MARA (UiTM) Pasir Gudang as a lecturer in the Faculty of Business and Management, specializing in Logistics and Transportation.

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Madiha Badrol Kamar graduated from Universiti Teknologi MARA in 2014 with a Bachelor's degree in Business Administration (Hons) Transportation. She pursued a Master's degree in Logistics and Transportation at the Malaysia Institute of Transport (MITRANS), Universiti Teknologi MARA (UiTM) Shah Alam, and completed her studies in 2020. In the same year, she joined Universiti Teknologi MARA (UiTM) Pasir Gudang as a lecturer in the Faculty of Business and Management, where she specializes in Logistics and Transportation.