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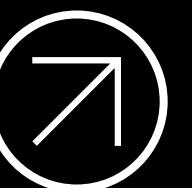
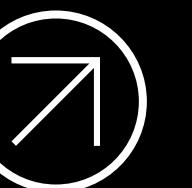
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Capstone Project Overview

# AI-Powered Virtual Try-On

Presented by Jayla Haskins



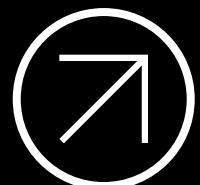
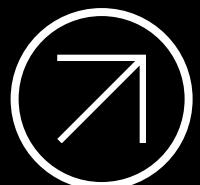
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# Overview

- Purpose: Develop an AI-based tool for virtual clothing try-ons using augmented reality.
- Target Audience: E-commerce platforms, Gen Z consumers.
- Key Technologies: Mediapipe for pose estimation, TensorFlow Lite for optimized performance.



Suitable for iOS

## Virtual Try-on for Clothes



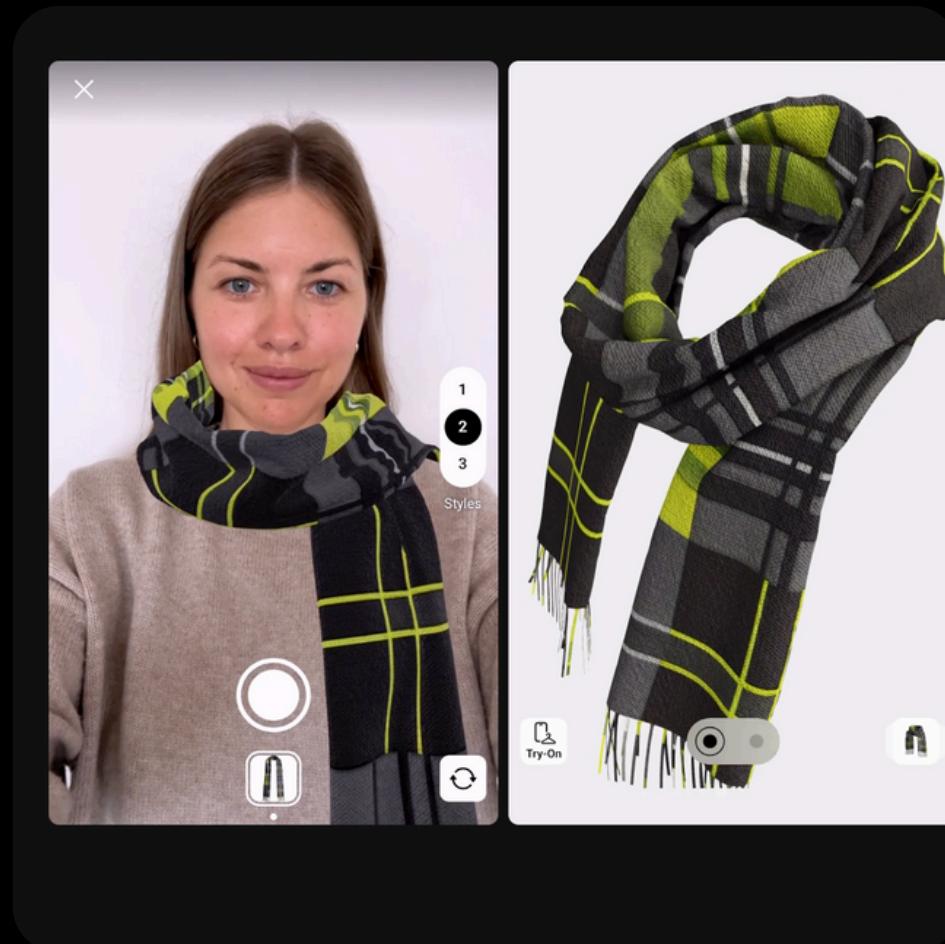
Overcome the limitations of online shopping by allowing customers to visualize your brand's clothes in AR, as if they were in-store. Leverage existing 3D assets to deliver an engaging, try-before-you-buy experience with the Virtual Try-On and 3D Viewer.



# Research & Technologies

- Pose Estimation: Using Mediapipe's Pose Landmarker for real-time human body tracking.
- Machine Learning Models: Use pre-trained models for accurate pose detection (e.g., MoveNet).
- Deep Learning Exploration: Experimented with U-Net and VITON-HD for realistic image generation.

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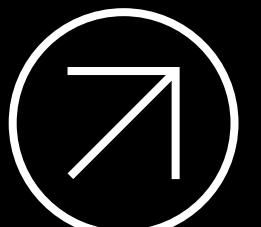
# Project Goals

- Create a prototype for overlaying clothing items on users' bodies in real-time.
- Develop an easy-to-use graphical interface for item selection.
- Optimize for Raspberry Pi hardware and demonstrate scalability.



# Live Walkthrough

1. User uploads their photo.
2. Clothing items are overlaid based on pose detection.
3. Users can adjust the positioning of the image.



**AI-Powered Virtual Try-On**  
Revolutionizing Shopping with AI  
Upload a photo or use the live webcam feature to try on clothes virtually!

**Live Pose Detection**  
This feature uses your webcam to detect pose landmarks in real-time. Press the button below to start live pose detection. Press 'q' in the webcam window to exit.

**Start Live Pose Detection**

**Upload Your Photo and Clothing Item**

Upload Your Photo  
Drag and drop file here Limit 200MB per file • JPG, PNG, JPEG [Browse files](#)

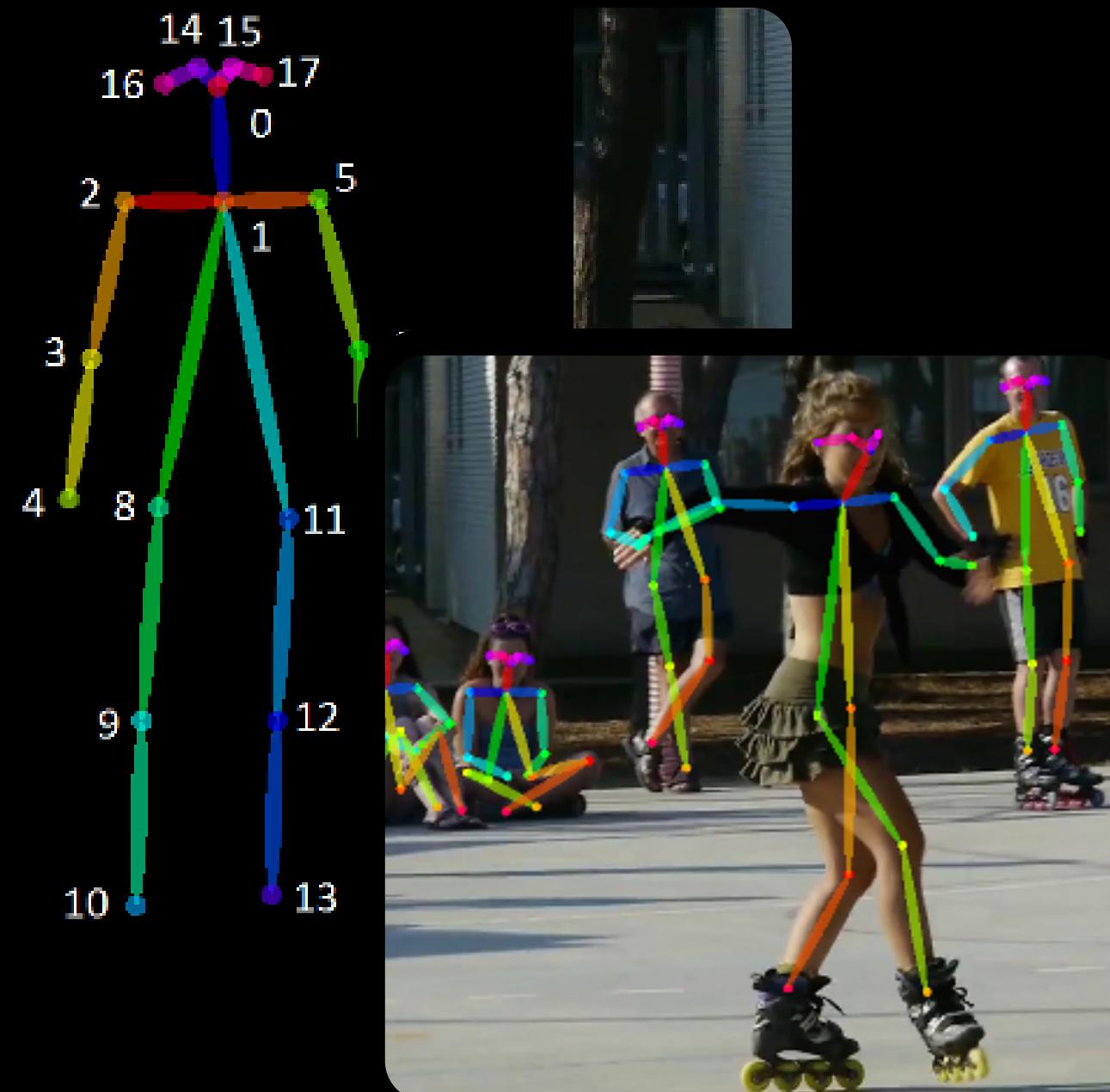
Upload Clothing Item  
Drag and drop file here Limit 200MB per file • JPG, PNG, JPEG [Browse files](#)

**Advanced: Clothing Segmentation**  
Use our pre-trained U-Net model for advanced segmentation.

**Run Segmentation Model**

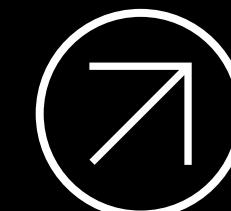
Developed by Jayla Haskins. AI-Powered Virtual Try-On is a cutting-edge solution to enhance shopping experiences.

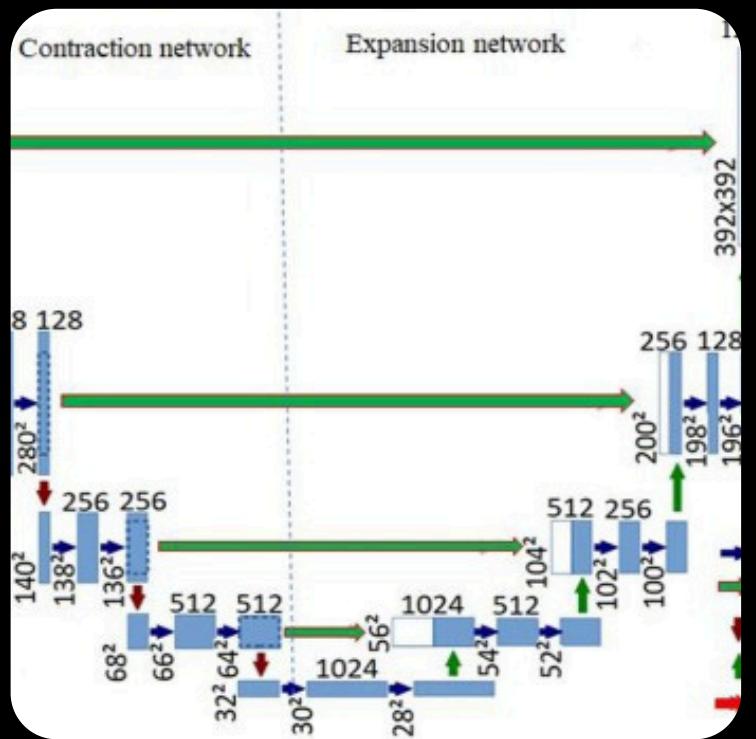




# Challenges Encountered

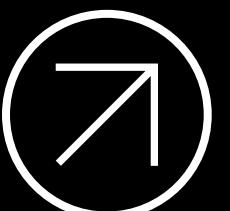
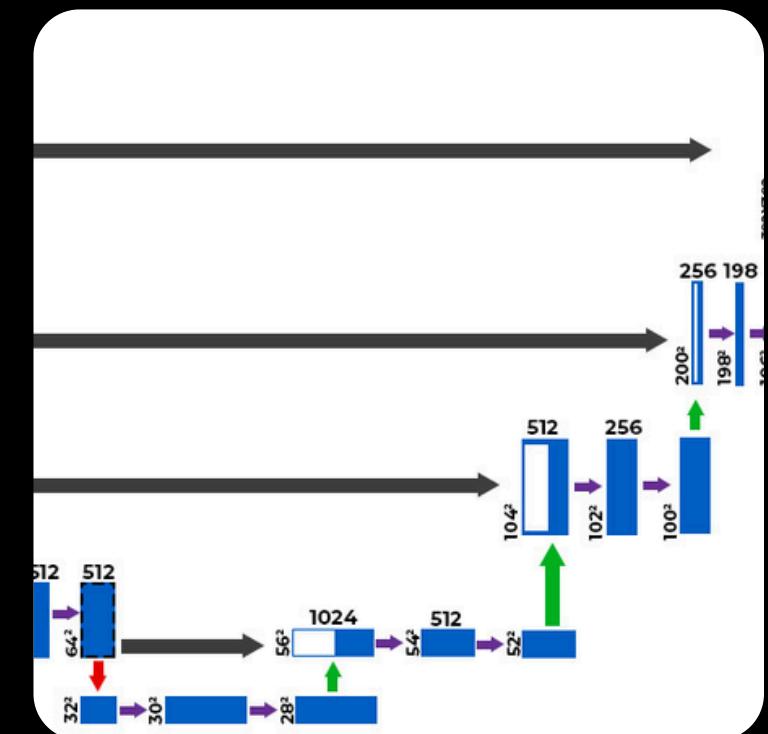
- Models require intensive computational power (two RTX 3090 GPUs).
- Processing times for deep learning models take over a week, which delayed final results.





# Experimentation with Deep Learning

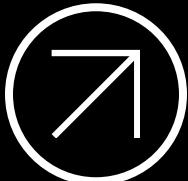
U-Net: Experimented with this architecture to segment clothing from the body.





# Key Learnings

- Pose Estimation: Mediapipe's pose detection was effective for body alignment.
- GUI Development: Learned how to create a user-friendly interface that integrates with computer vision tools.
- Deep Learning: Gained valuable insights into how deep learning models like U-Net and VITON-HD can be used for more realistic try-ons.





# Next Steps & Future Work

- Complete the final product with improved processing times.
- Expand functionality: Include more clothing items, makeup, or accessories.
- Scale: Explore cloud-based solutions to handle computational demands and enhance model performance.

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# Thank You

For Your Attention

