

# Team B8 - Smart Mirror

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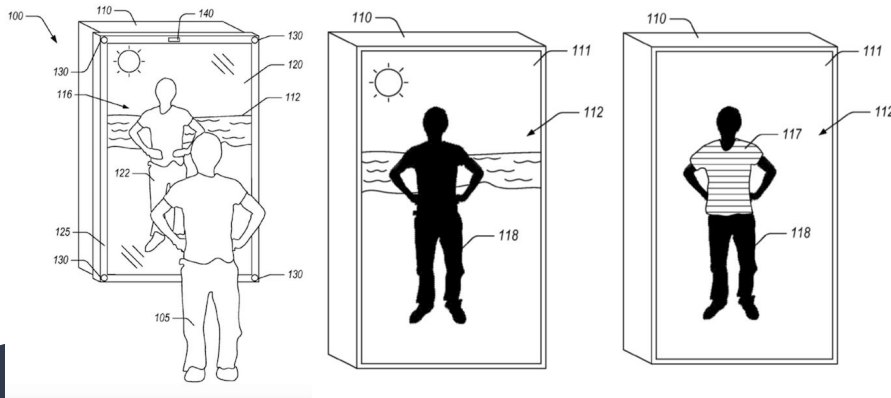
# Problem

- Increase in online shopping
- Hard to know how clothing will look until you have already purchased it
- Returns are a hassle



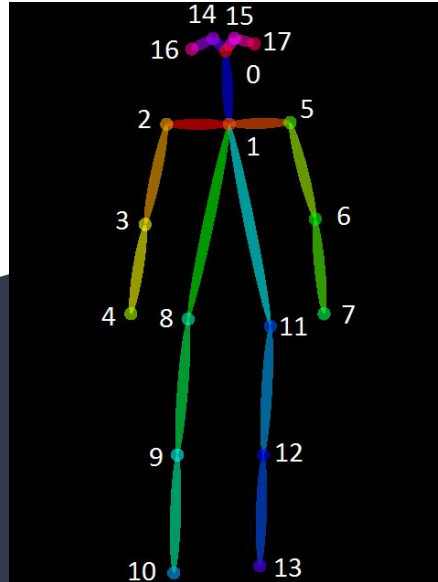
# Our Solution

- *We want to make a simple, inexpensive and accessible smart mirror that utilizes a torso recognition computer vision algorithm to allow users to try on tops.*



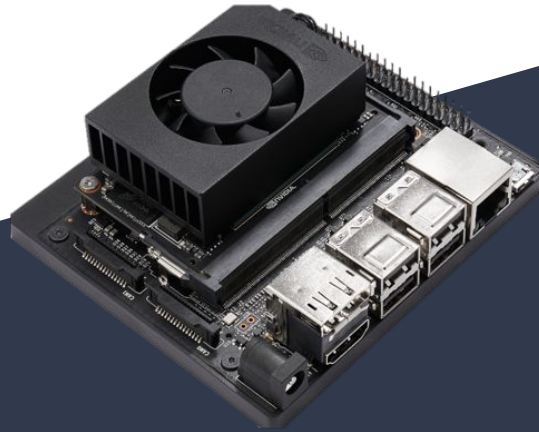
# Requirements (Software):

- Torso recognition algorithm and superimposing image on body to display with at most 3.5 second latency
- Remote user interface



# Requirements (Hardware):

- Capture image with camera
- Computing device to process images in real time
- Screen to display image
- Two-way mirror to reflect



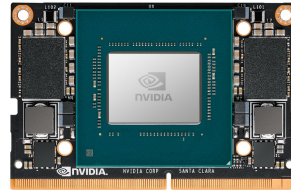
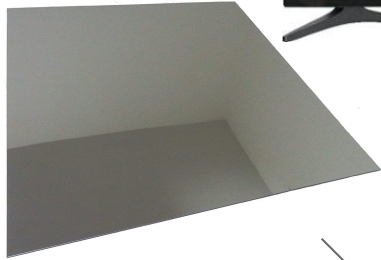
# Technical Challenges (Software):

- Accurate torso recognition algorithm
- Fast processing speed, low latency
- Mapping clothes to torso
- Processing image to fit/warp to body

# Technical Challenges (Hardware):

- Calibrating image on monitor to match with reflection in mirror
- UI controls
- Physically building a compact product
- Cost

# Solution Approach (Hardware):



2-way mirror

LED TV Screen

Jetson Xavier NX

Arducam  
cameras



# Solution Approach (Software):

Shirt example:

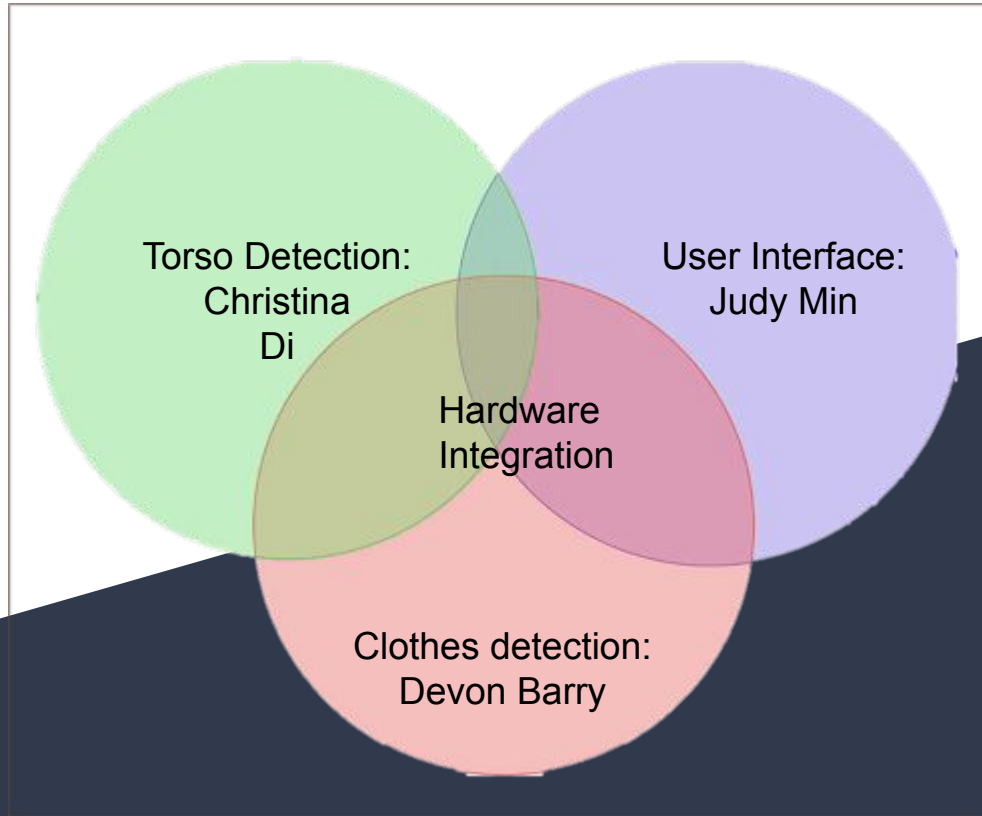
- Detect body measurements
- Get measurements of shirt from store or manual input
- Run image of shirt through DeepMark clothing detection to get keypoints
- OpenPose to get keypoints on body
- Connecting keypoints
- Displaying clothes on body
- Track movement of body



# Testing:

- Torso detection: different body types and backgrounds
- Clothes detection: different types of clothing and images
- Mapping: using clothes we already own, comparing how our algorithm warps clothes to the body vs how the clothes actually fit
- Latency

# Tasks/Division of Labor:



# Schedule:

## Smart Mirror

