

# Fingerprint Presentation Attack Detection: Generalization and Efficiency

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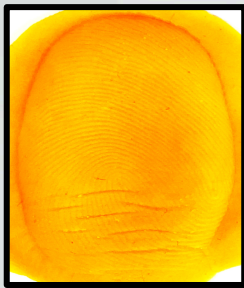
June 7, 2019



Silicone



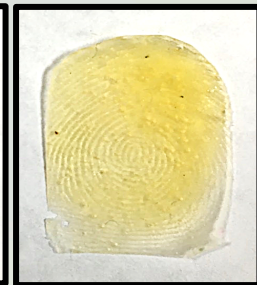
Dragon Skin



Play Doh



Gelatin



Wood Glue



Gold Finger



Monster  
Liquid Latex



Latex Body  
Paint



2D Printed  
Paper



2D Printed on  
Transparency



Conductive  
Ink on Paper



Universal  
Targets

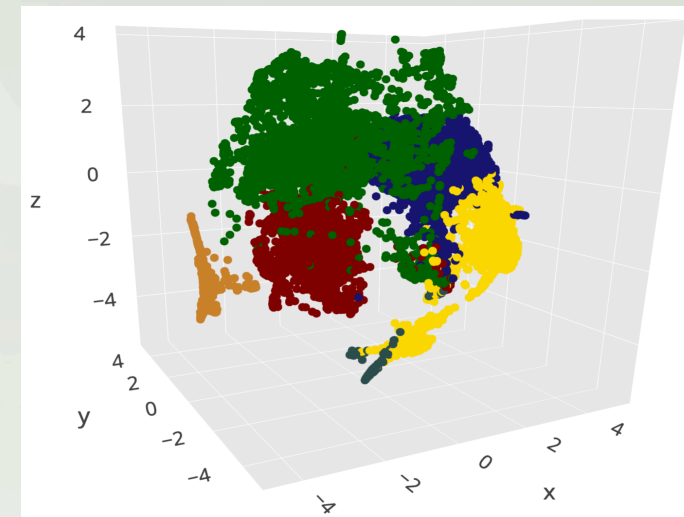
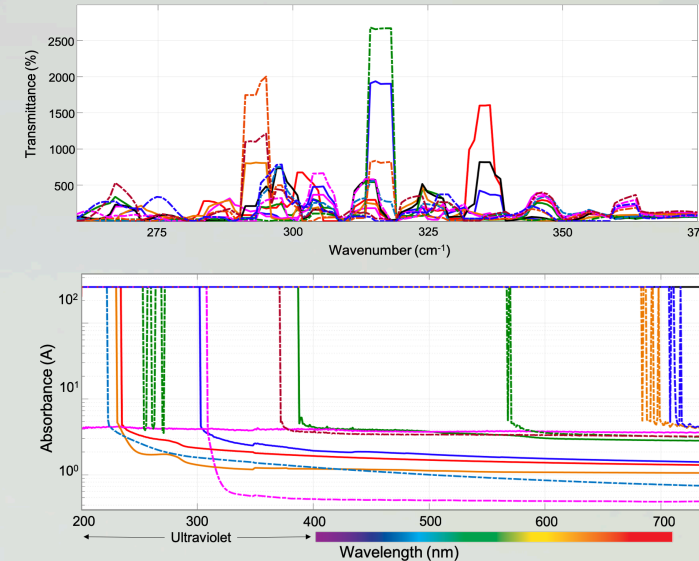
# Proposed Approach

## ➤ Generalization

- Evaluated leave-one-out performance of a SOTA spoof detector, *Fingerprint Spoof Buster*, using 12 materials
- Investigated material characteristics and 3D t-SNE CNN feature embeddings
- Identified a subset of representative PA materials to train a robust spoof detector

## ➤ Efficiency

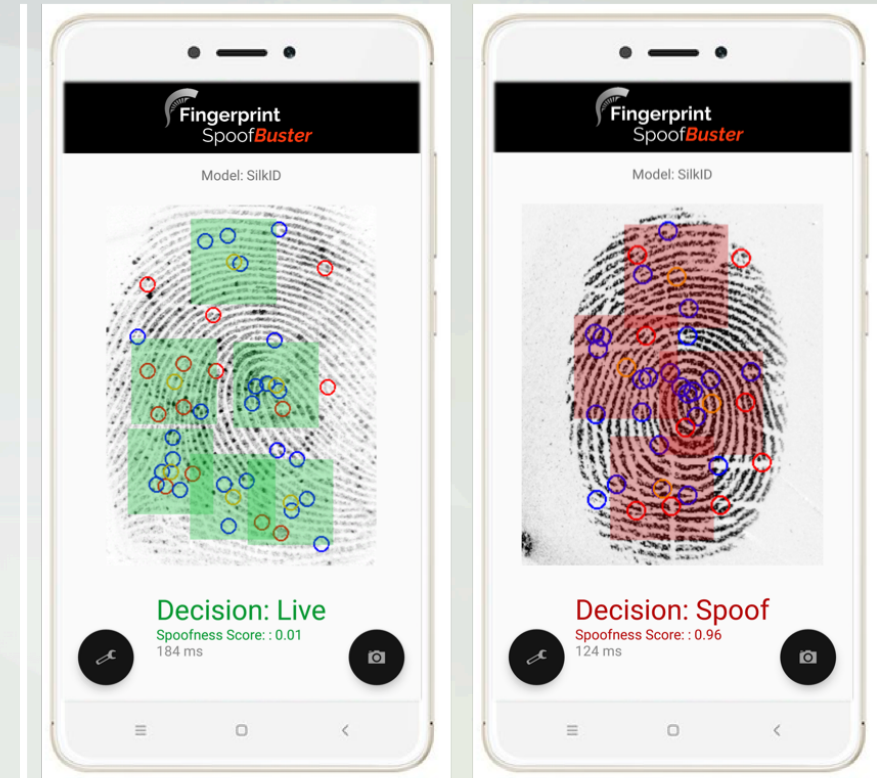
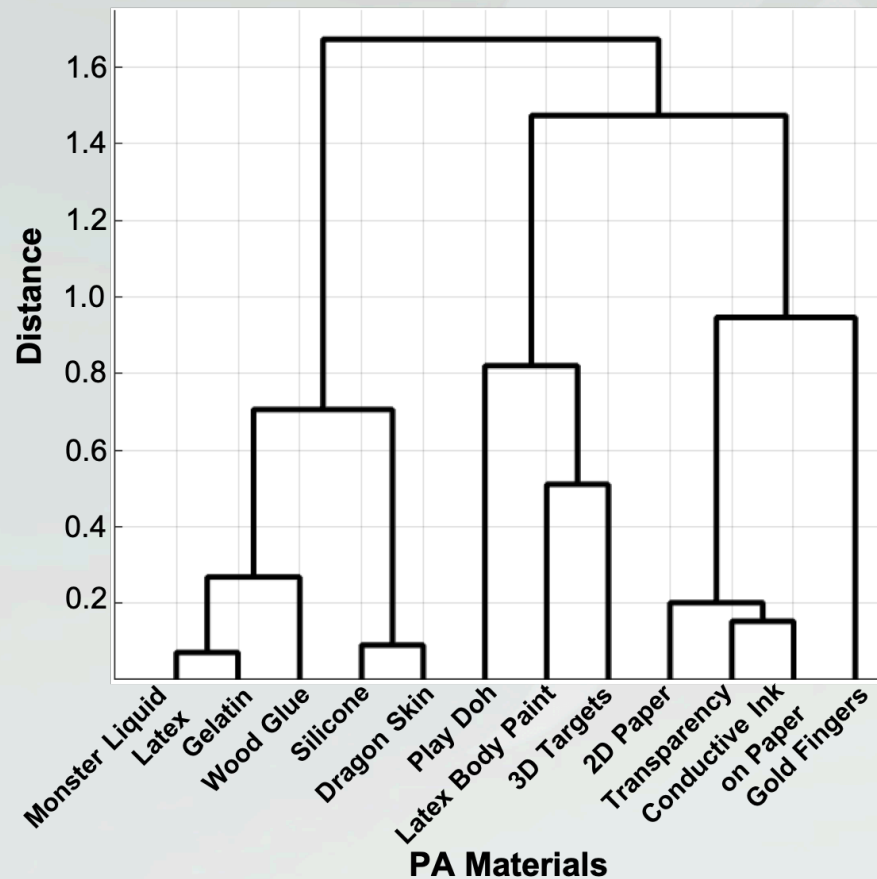
- Quantization of CNN model for byte computations instead of floating-point
- Minutiae clustering followed by weighted score fusion to reduce redundant computations



# Key Findings

Identified a subset of 6 materials that are essential to train a robust spoof detector

Developed an efficient spoof detector that can perform spoof detection in less than 100ms on a commodity smartphone



Check out the live demo at Poster #2 😊