



Matthew Anderson

HPC Application for Multispectral Facial Recognition

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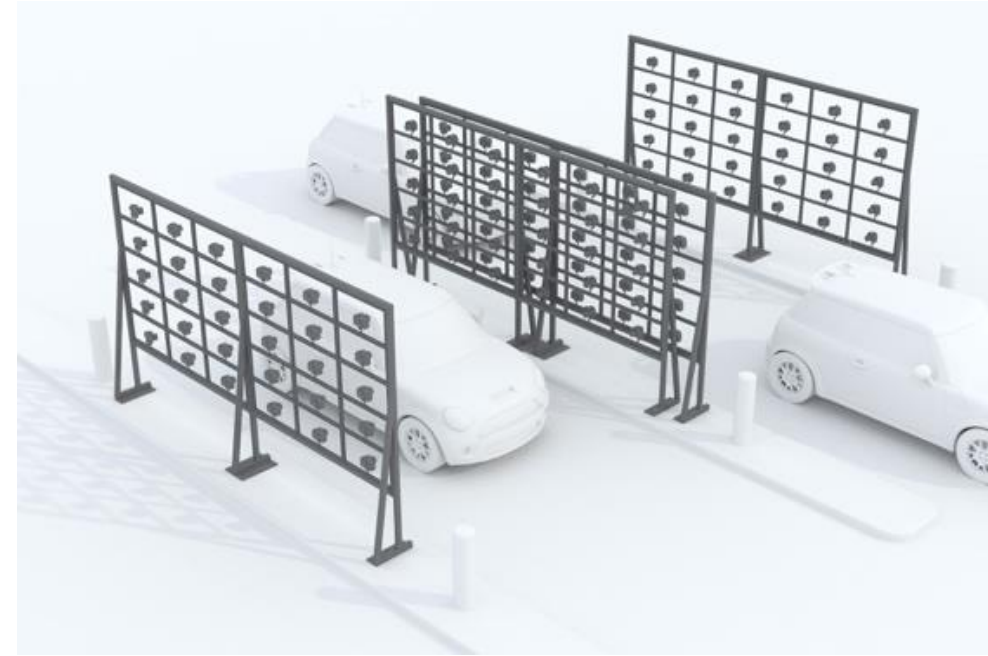
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Overview: multispectral facial recognition

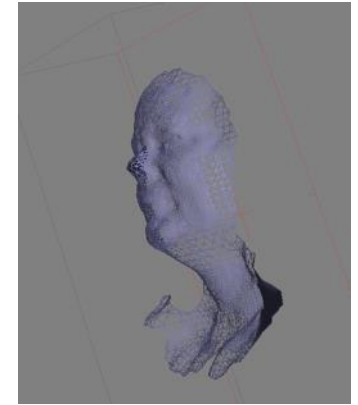
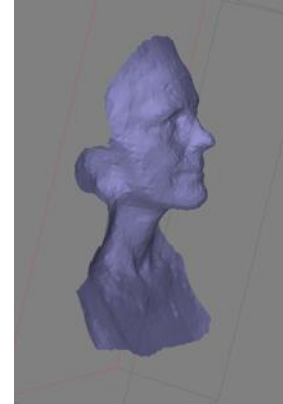
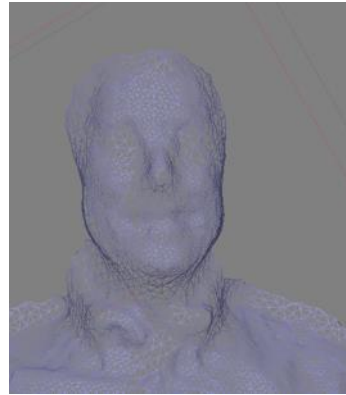
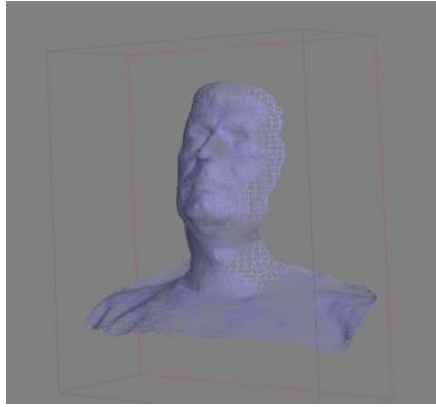
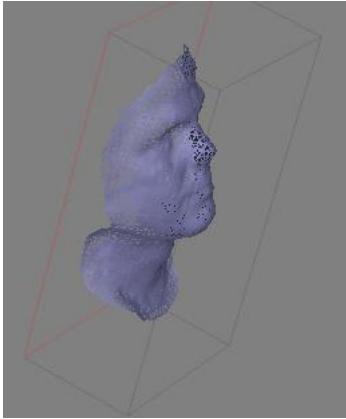
- Infrared spectrum consists of four main bands:
 - Near Infrared (0.75—1.4 μm)
 - Short Wave Infrared (3-5 μm)
 - Mid-wave Infrared (8-15 μm)
 - Long-wave Infrared (8-15 μm)
- Infrared facial recognition:
 - Has the same challenges as visible band facial recognition (i.e. large facial pose variation leads to false negatives)
 - Does not have databases to support training for machine learning approaches (i.e. no public SWIR facial databases at present!)



3-D Biometric Multispectral Approach



Why HPC?



- Typical 3-d multispectral point clouds consist of over 80,000 pts
- Conversion to an implicit surface function requires 85 teraflops using IU's patented algorithm.
- Produces extremely low false negatives in the presence of large facial pose variation with typically low 3D FAR.



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THANK YOU

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