

# RGB-D and Thermal data for Human Analysis

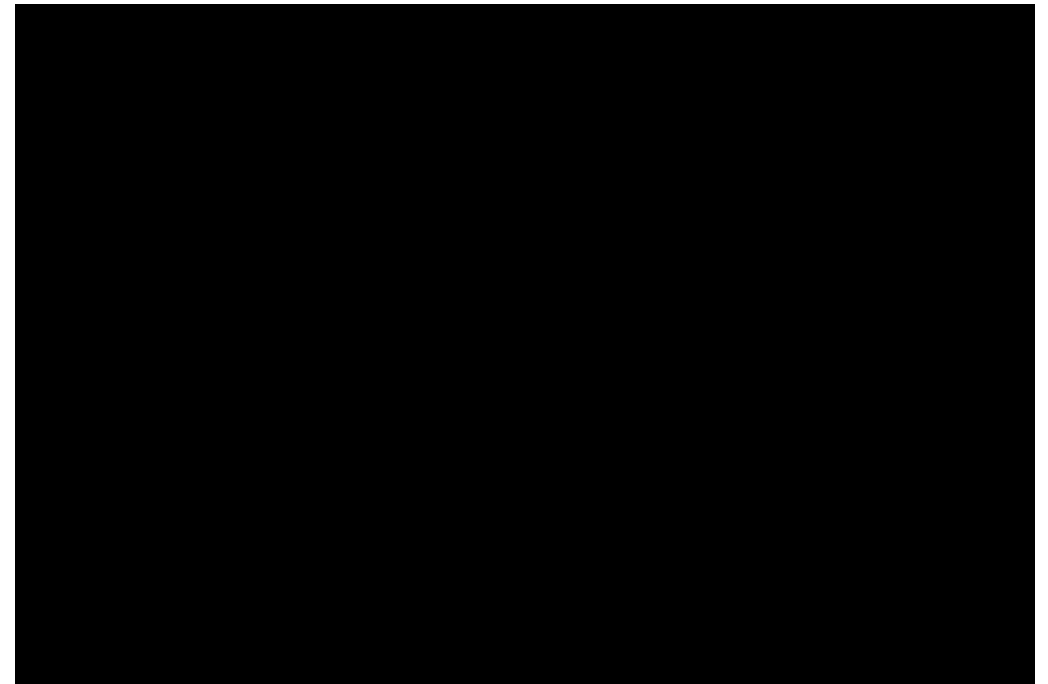
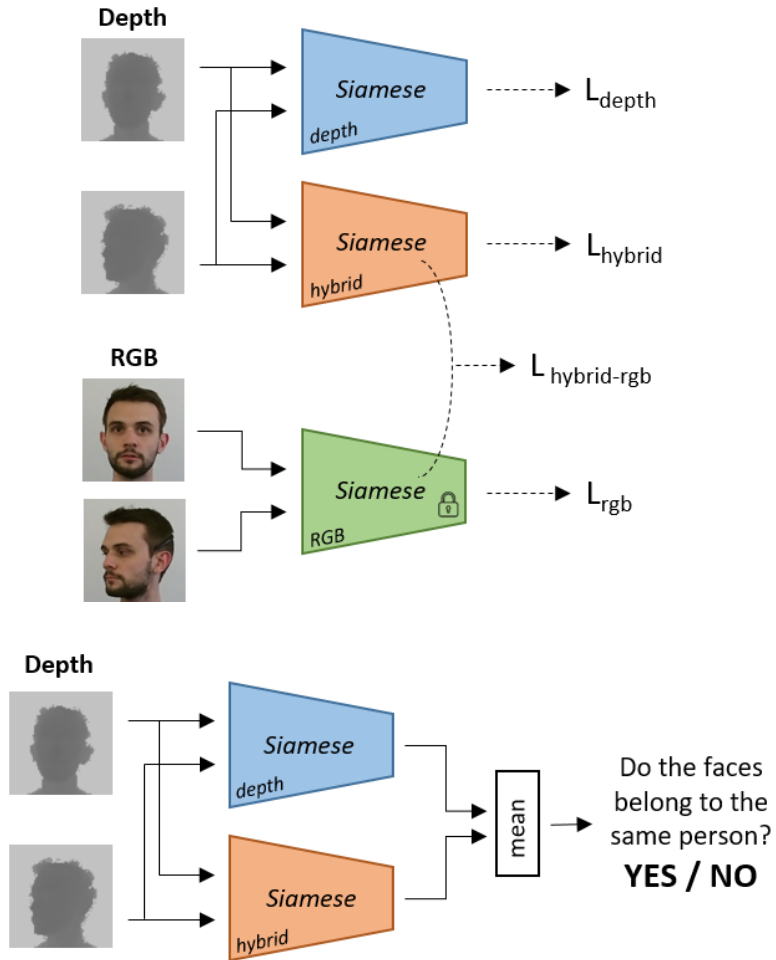


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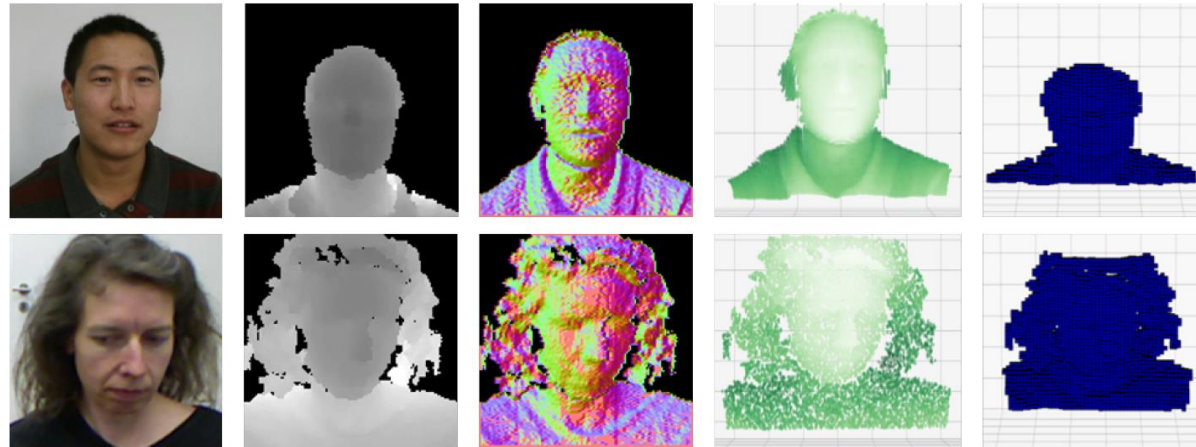
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## Face Verification using Privileged Information



Which is the most effective representation of depth maps for the face recognition task?

Which kind of neural networks should be used to analyze them?



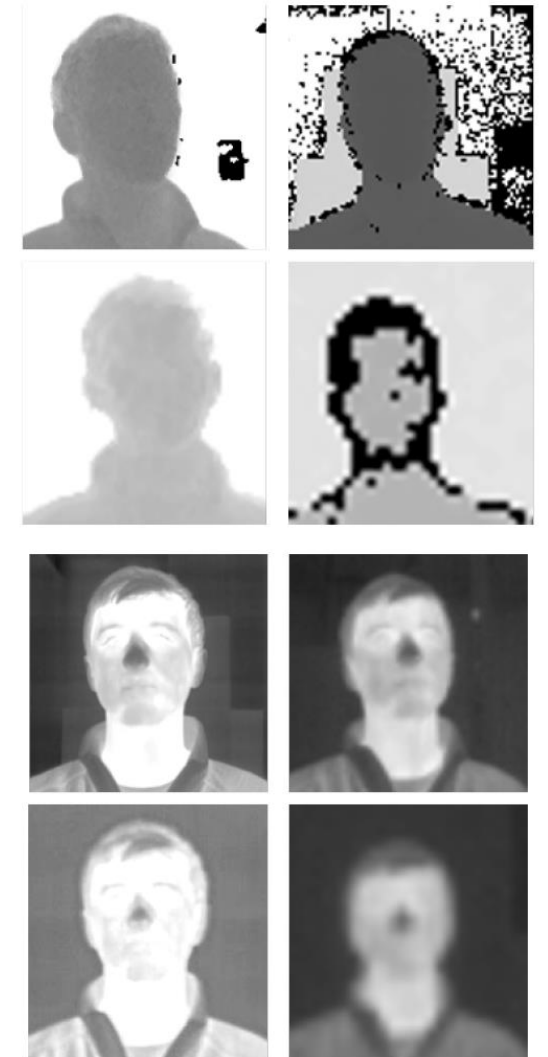
## Findings:

- Huge discrepancy between intra- and cross-dataset experiments and between different sensor-subject distances
- Surface normals and point clouds obtain the higher recognition accuracy in cross-dataset experiments

## MultiSFace

### A multi-sensor dataset for Face Recognition

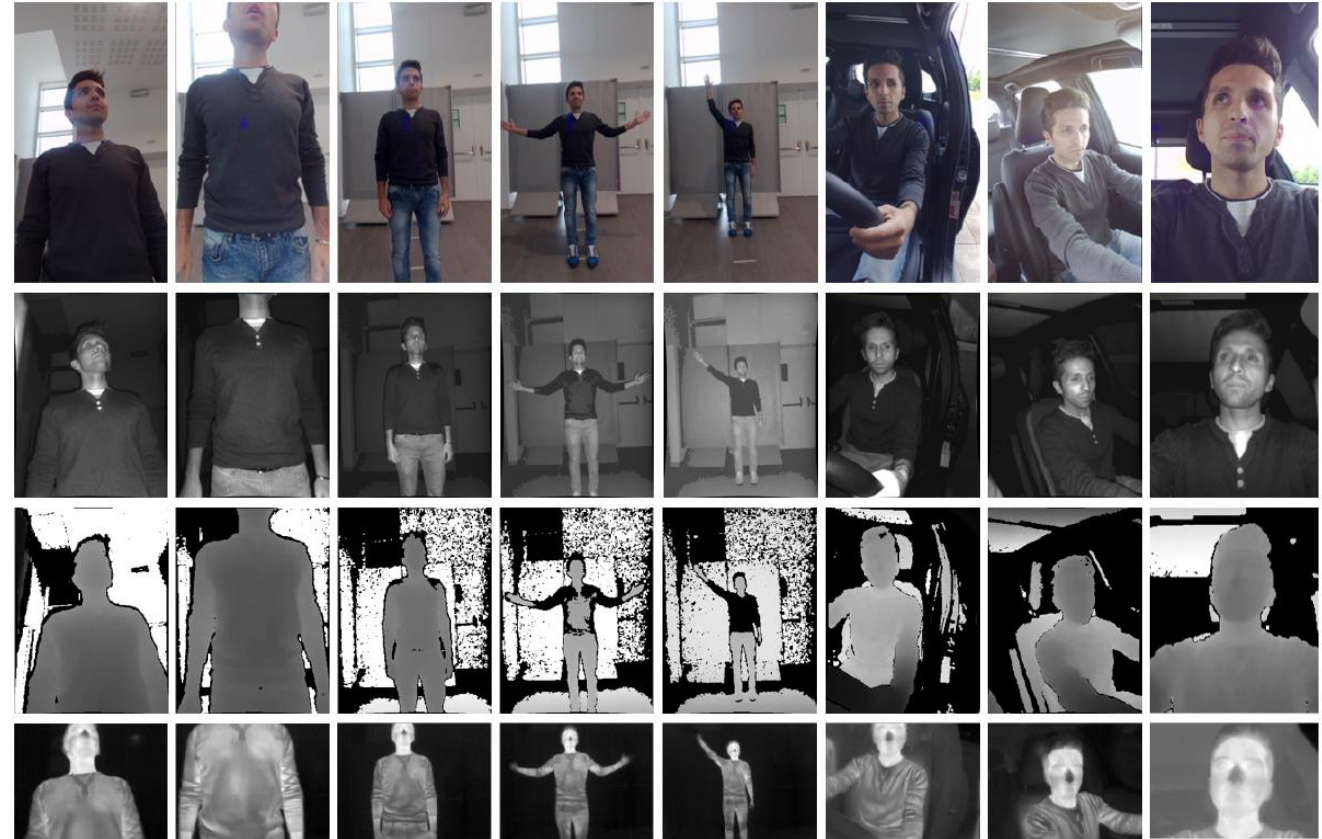
- 31 subjects
- 3 different poses (frontal, side, and back)
- 2 different distances (1m, 2.5m)
- Multiple synchronized devices:
  - Depth (ToF):
    - Pico Zense DCAM7101 (high res)
    - Pmdtec Pico Flexx 2 (low res)
  - Thermal:
    - Flir Boson 640 (high res)
    - Flir PureThermal 2 with Flir Letpon 3.5 (low res, radiometric)
  - RGB



## Baracca Dataset

A multi-sensor dataset for the estimation of anthropometric measurements and soft biometrics

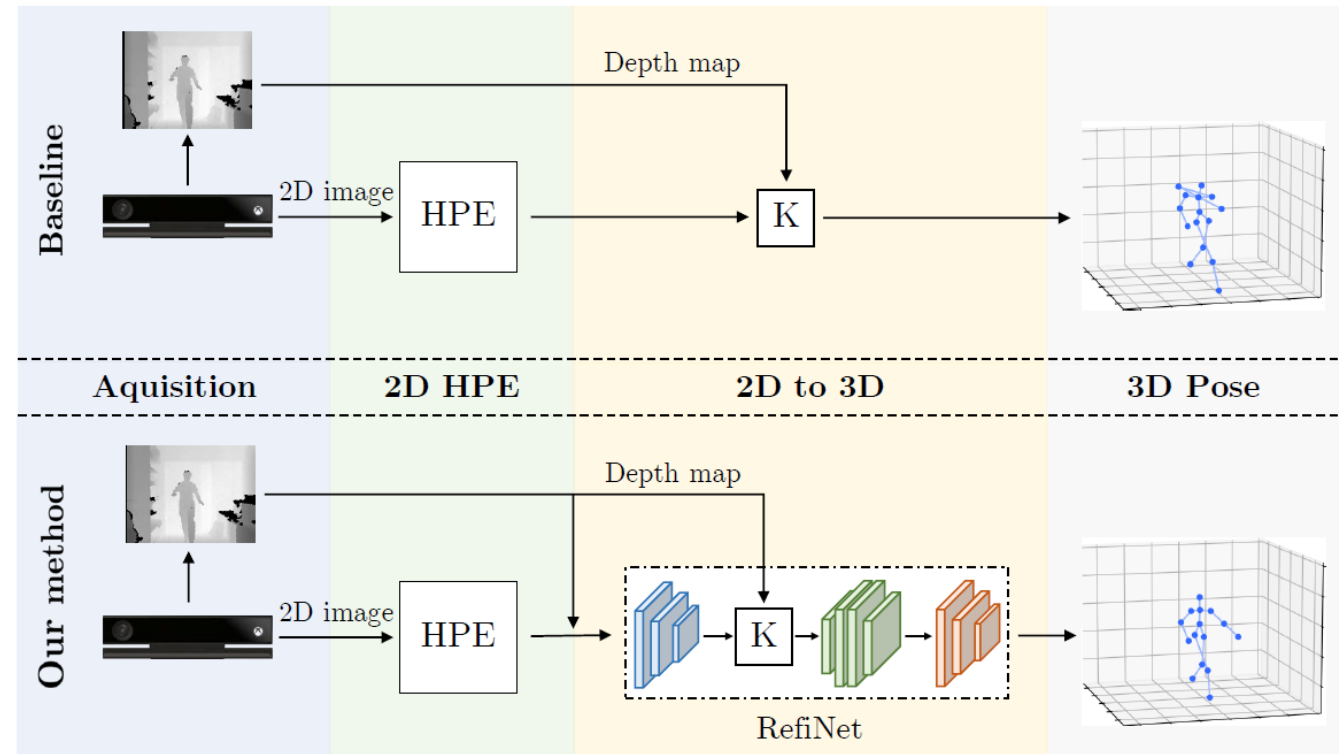
- 30 subjects
- 5 in-car sequences
- 3 outdoor sequences
- Two synchronized devices:
  - Pico Zense DCAM7101 (ToF, RGB+IR+DEPTH)
  - Flir PureThermal 2 with Flir Letpon 3.5 (radiometric thermal sensor)
- Anthropometric measurements: height, shoulder width, forearm and arm length, torso width, leg length, eye height from the ground.
- Soft-biometric traits: age, sex, weight





## RefiNet: 3D Human Pose Refinement with Depth Maps

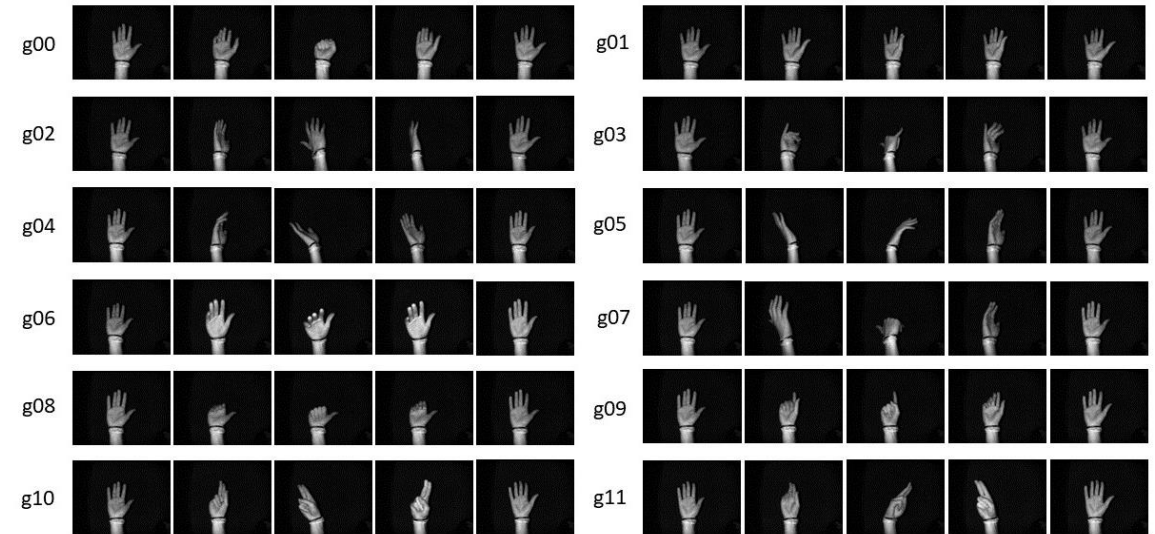
- Goal: Obtain accurate 3D human pose estimation (in the camera space) from RGB-D data (ToF sensors) and an estimated 2D pose
- Steps:
  - 2D HPE
  - 2D joint refinement
  - From 2D to 3D pose using depth maps and camera calibration parameters
  - 3D joint refinement
  - 3D pose refinement



## Briareo Dataset

### A dynamic hand gesture dataset for the Human-Car Interaction

- 40 subjects
- 12 gestures
- Each gesture is repeated three times
- Multiple devices:
  - Depth (ToF):
    - Pmdtec Pico Flexx (Depth+IR)
  - Stereo InfraRed:
    - Leap Motion (IR+3D hand joints)
  - RGB



# Thank you! Questions?

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