

Detector of weapons in video

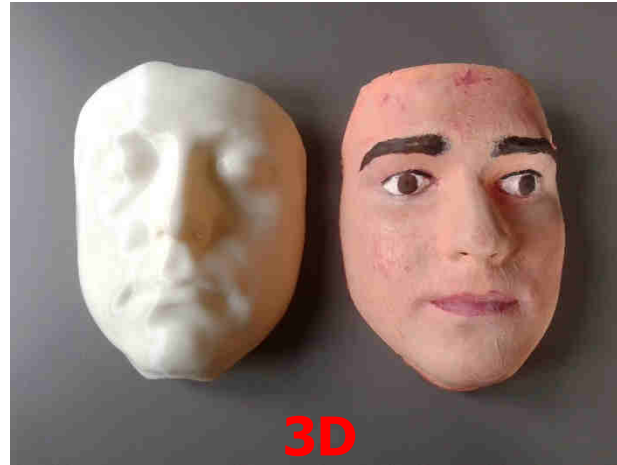
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2D



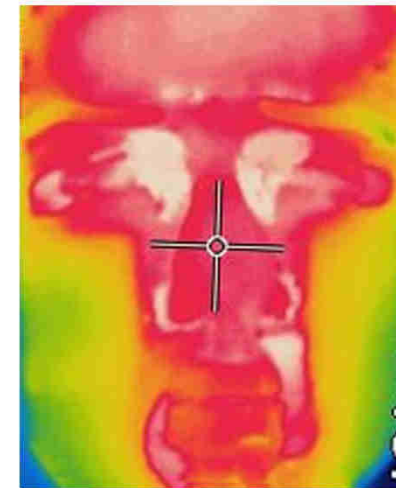
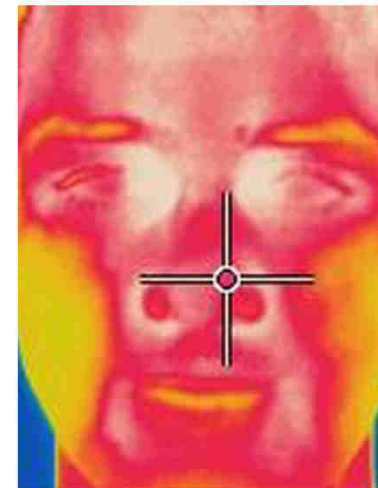
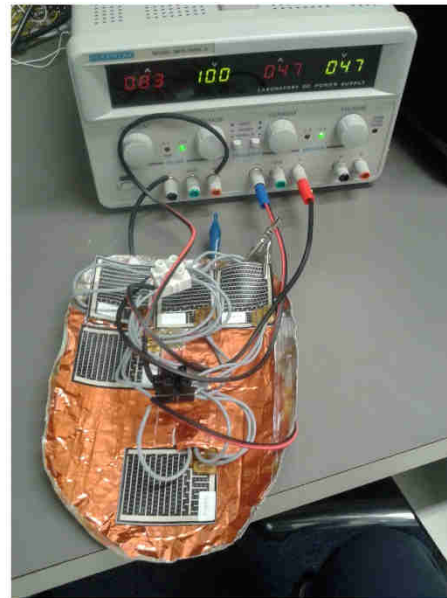
3D



MirrorMe3D.com



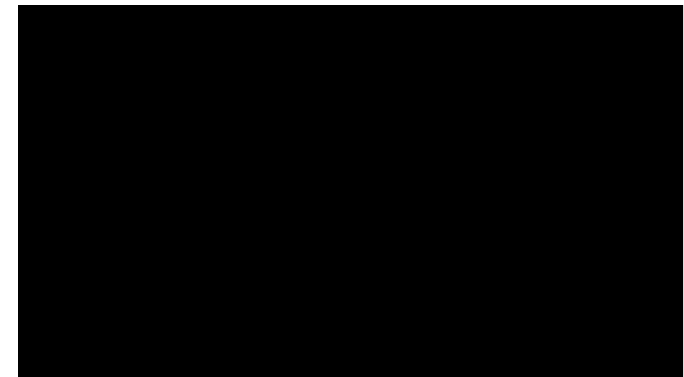
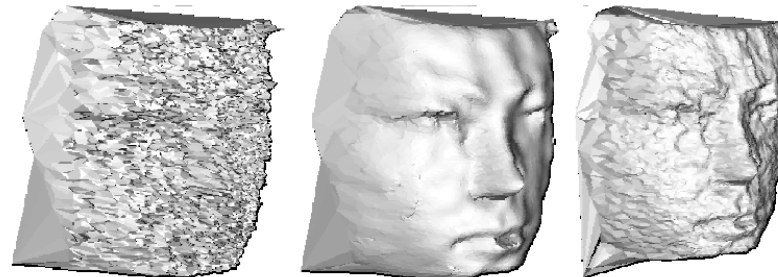
Thermo

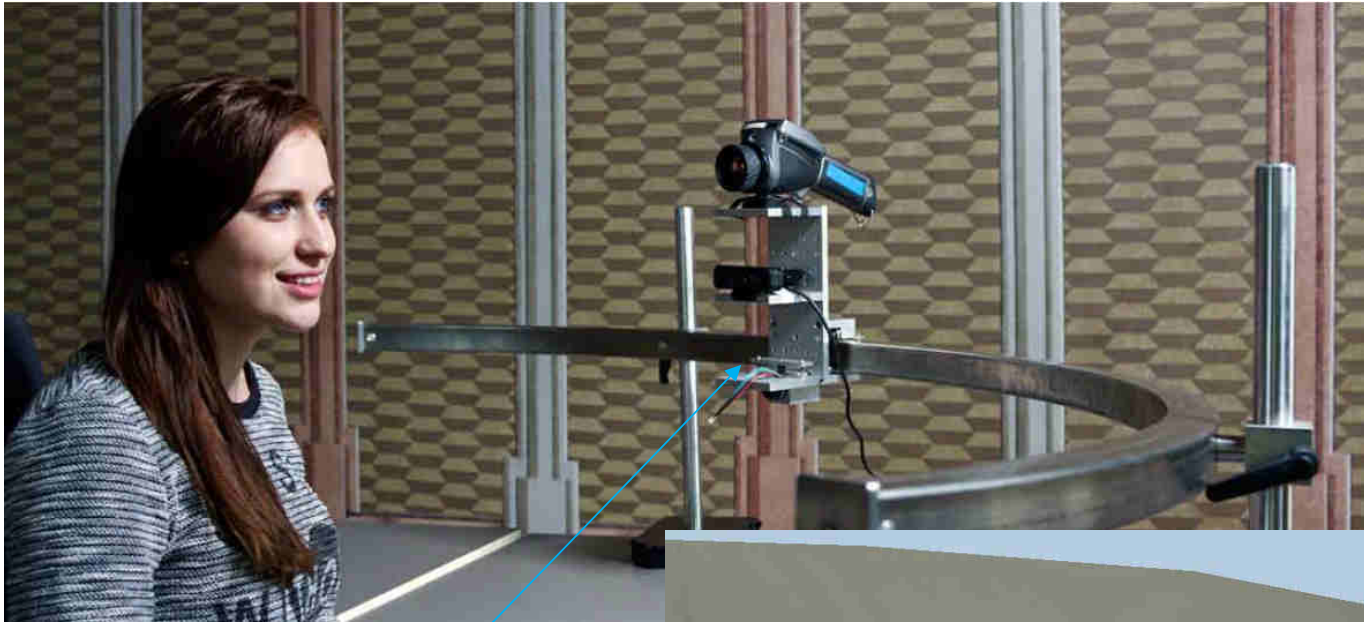


Thermo

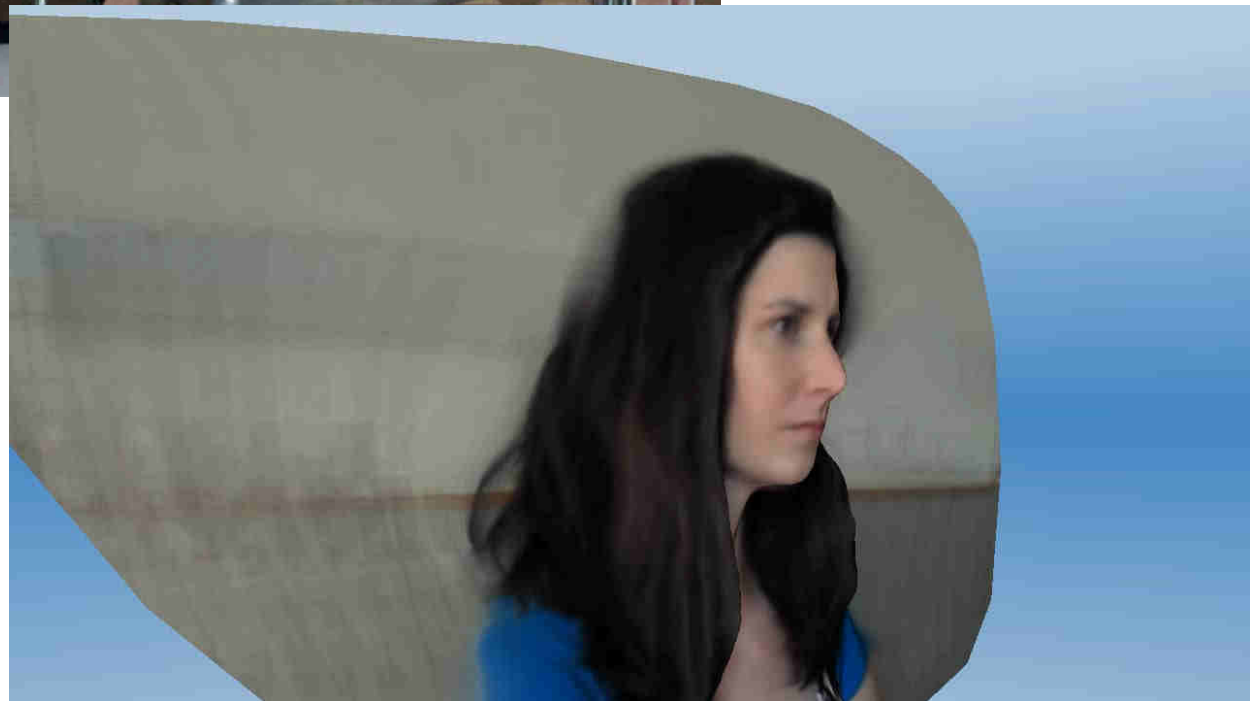


Principle: structured light / ToF





- Thermo-camera
- 3D camera
- Video-camera

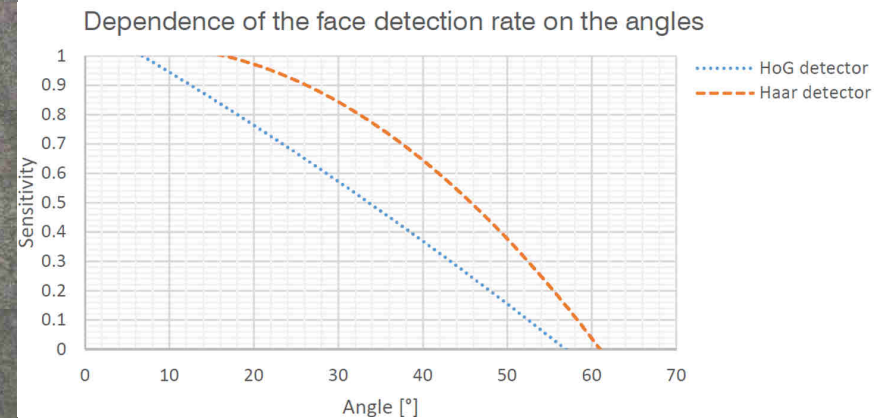
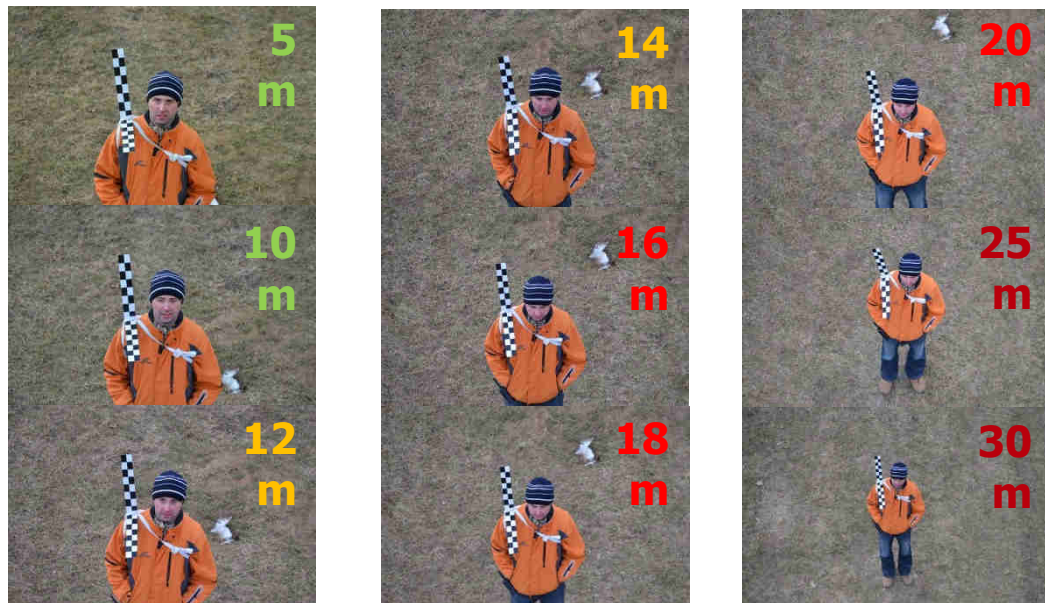


Details in scene from CCTV

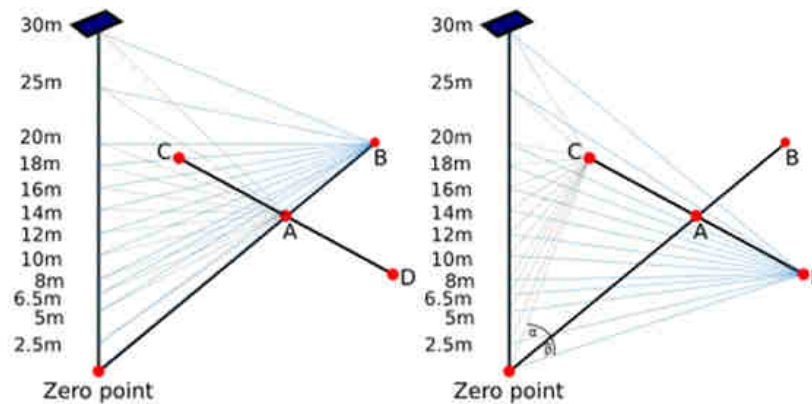




Measurement using platform 30 m (database – images & videos)



Setup



Height angles

+ Side angles

HeadViewer - <http://www.fit.vutbr.cz/~igoldmann/app/headviewer/>

HeadViewer - simulation tool for viewing head from the CCTV camera position (v1.0)

Options

- Height of camera: 10 m (0-50 m)
- Distance to camera: 10 m (0-250 m)
- Vertical trajectory: 10 m (0-250 m)
- Height of the person: 1.8 m (0-2.5 m)
- Draw a face recognition grid

Results

- Position for detection: Poor
- Angle of elevation: -41.68°
- Side angle: 20.49°

Top view

Angle of view: -28.93°

Side view

7,10m

Angle of elevation 41,68°

View from camera

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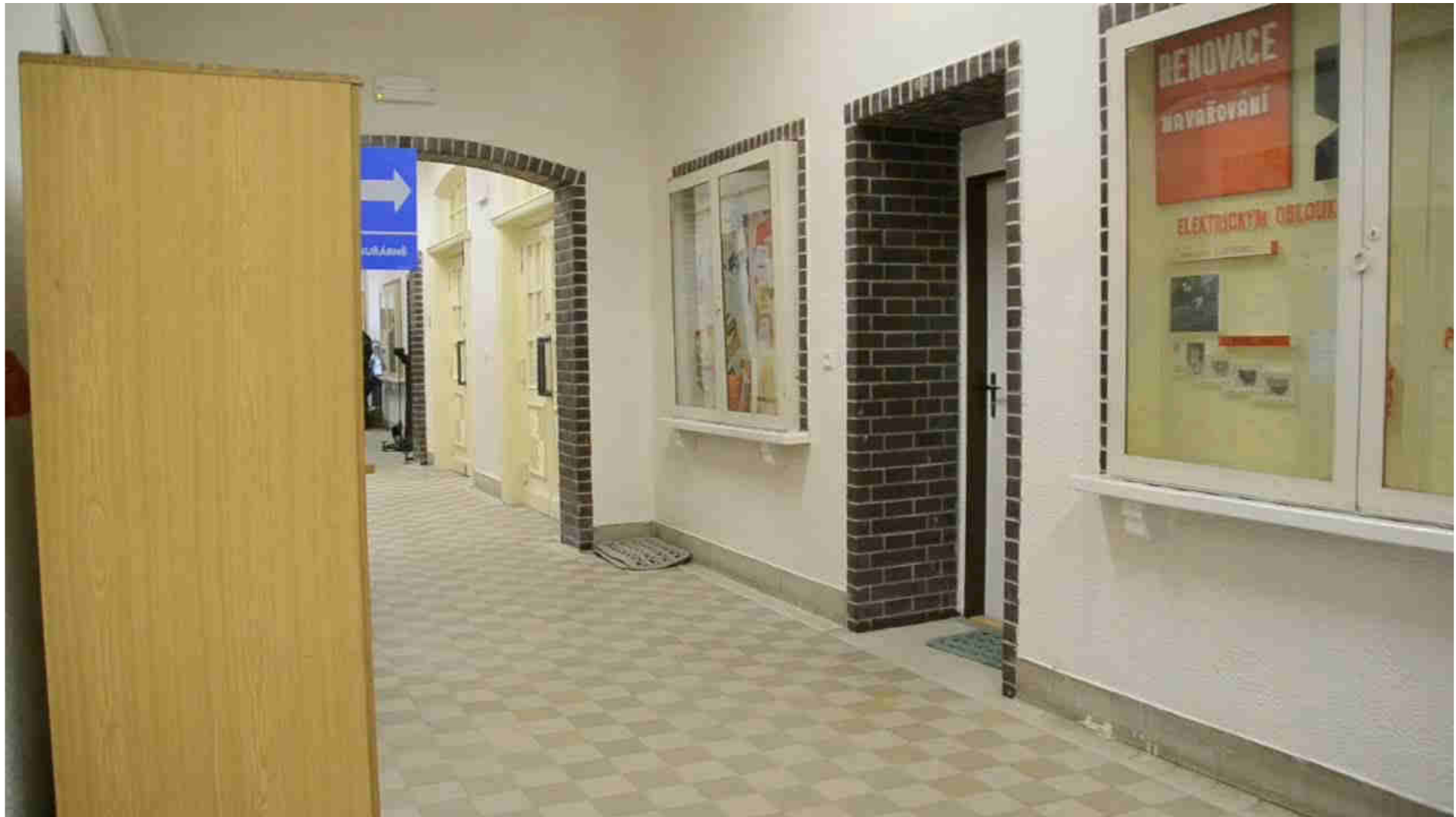
HeadViewer - <http://www.fit.vutbr.cz/~igoldmann/app/headviewer/>

The screenshot displays the HeadViewer application interface, which is used for simulating camera head positions. The interface is divided into several sections:

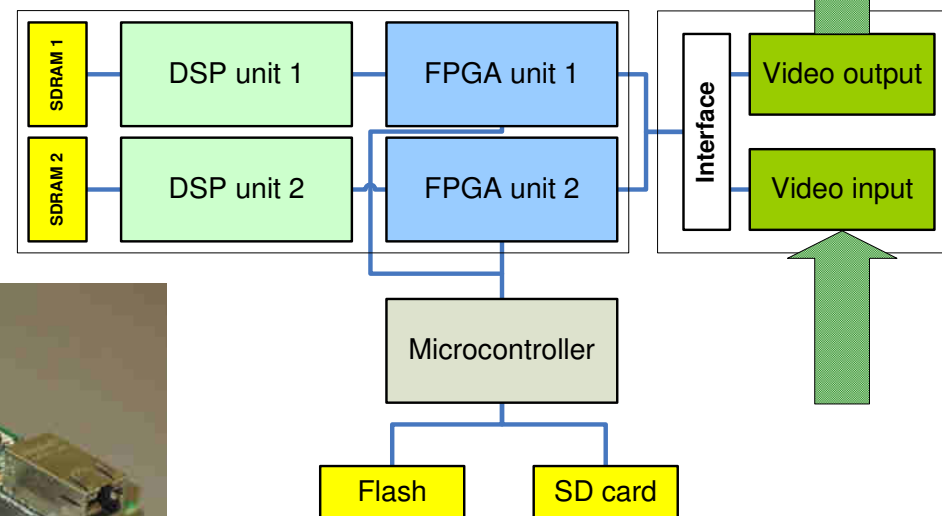
- Control Panel (Left):** Contains input fields for camera height (15 m), distance to camera (15 m), vertical trajectory (30 m), and person height (0.5 m). It also includes a checkbox for "Vykreslit mřížku na obličej" and buttons for "Použít hodnoty" and "Export situace".
- Output Section (Left):** Shows simulation results: "Pozice pro detekci" is "Dobrá", "Výškový úhel" is 37,95°, and "Boční úhel" is 0,00°.
- Top View (Horní pohled):** A diagram showing a vertical pole with a camera at 15,0m height. The viewing angle is 0,00°.
- Side View (Boční pohled):** A diagram showing a person at 0m height and a camera at 11,20m height. The viewing angle is 37,95°.
- Camera View (Pohled z kamery):** A 3D rendering of a human head with green markers on the forehead, eyes, and nose.

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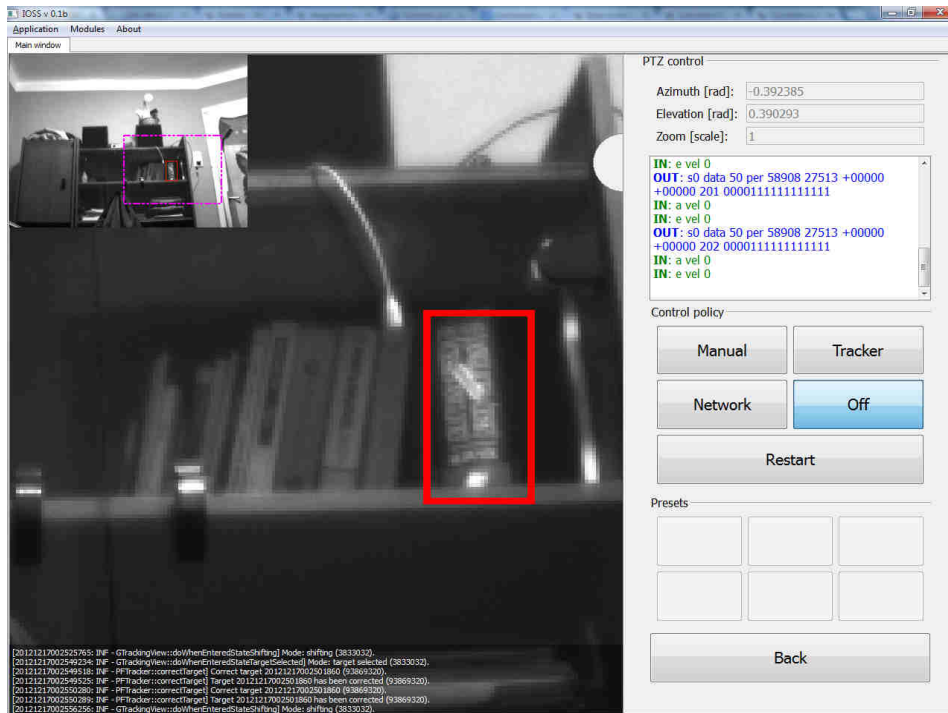
Face detection



Hardware boards for image processing



Object tracking

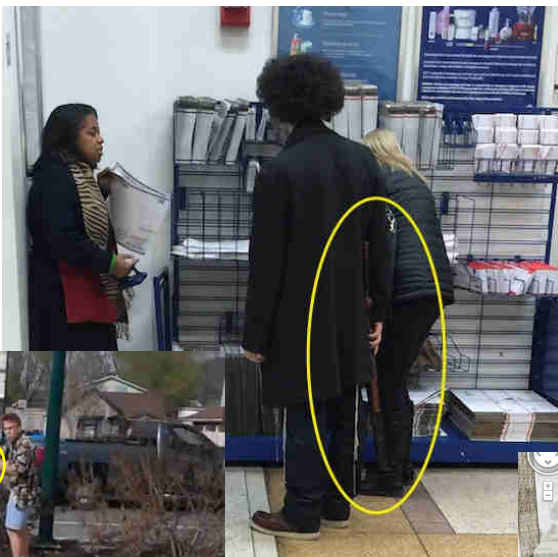
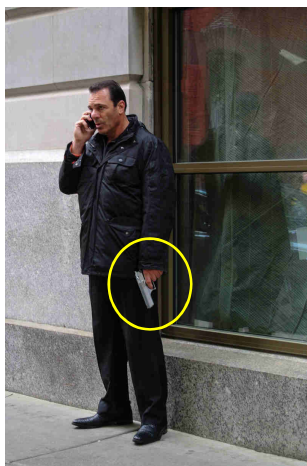


sAOTS

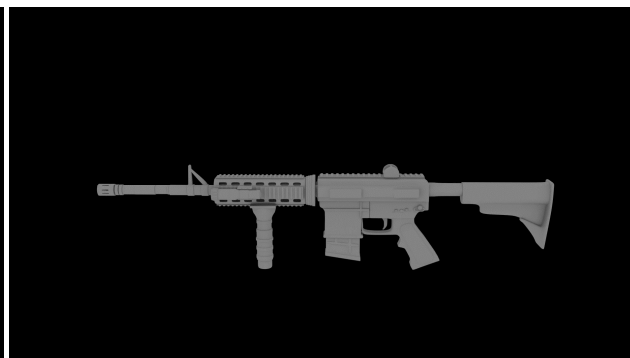
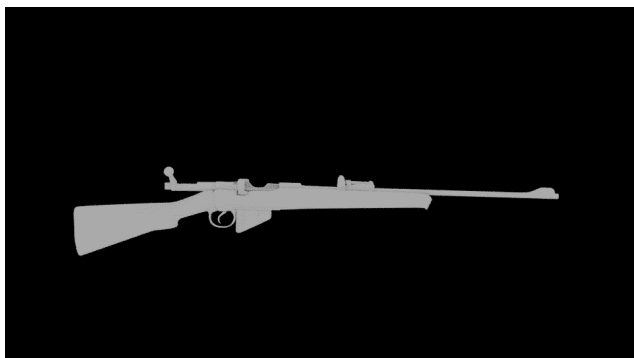




Detection of weapons in images I.









3D model from DB + projection



Beretta Mod. 92



Thank you for your attention

Thanks to: MVČR VI20172020068 „*Tools and methods for video and image processing to improve effectivity of rescue and security services operations*“ and IGA FIT-S-17-4014 „*Secure and reliable computer systems*“