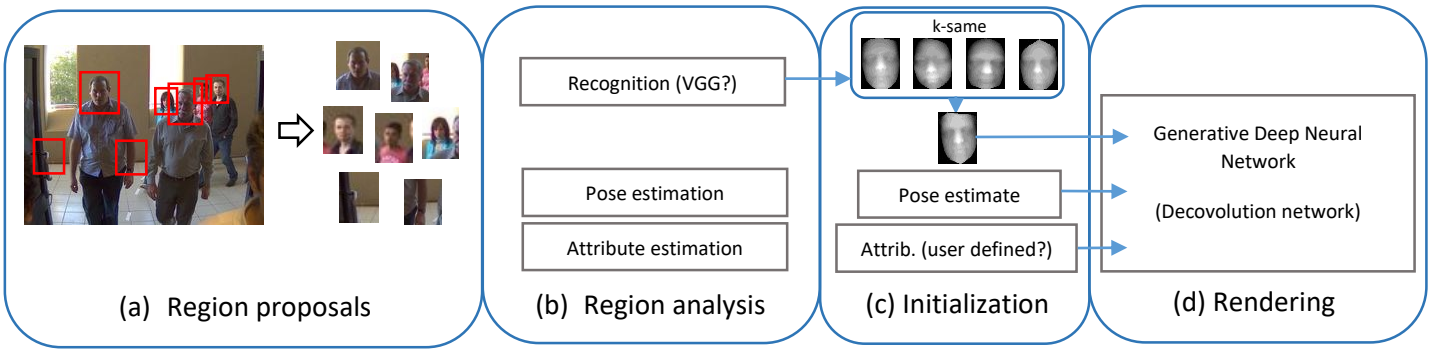
Deidentification using deep networks

Block diagram



Main steps

(a) Region proposals:
- We can use RegProp networks or efficient face detector (optimized for 0% false negatives)

(b) Region analysis:
- We need to do recognition on the regions to find k-closest identities from some background dataset (recognition on 2D images)
- We need to generate an average 3D model based on the closest k identities (we require a dataset with aligned 3D in 2D data)
- We need an estimate of the pose or location of landmarks (we can simplify this in the first step and use frontal images for the moment)
- We need some attributes that can be preserved (gender, age, expression) – can focus on two or three for the time being)

(c) Initialization:
- This is needed by the generative part (the network)
- Really needed are the face model and potentially the pose, the rest can be user defined for the moment

(d) Rendering:
- A generative deep network will generate a new image with different appearance
- The attributes can be preserved (can be selective)

Timeline

Proof-of-concept with major simplifications (the generative part):	9 November, 2016
Development and fine tuning:	23 November, 2016
Experimenting and result generation:	7 December, 2016
Paper written:	31 December, 2016

Responsibilities

Turkey:

- Region proposals
- Attributes (gender, …?)

Slovenia:

- Recognition
- K-same model generation
- Generative network

Experiments:

- Region proposal performance (TUR)
- Recognition experiments before and after deidentification (4SF, VGG, LUKS_Net, other?) (SLO)
- Human recognition experiments before and after (TUR)
- Human labels for (naturalness, attribute preservation?, …) (SLO)