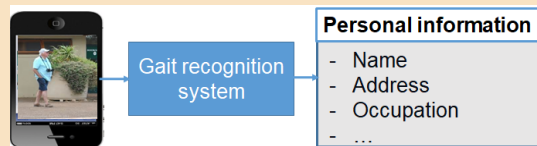


Motivation

Social internet users can upload and share the videos easily
People in videos may be recognized by gait recognition systems
because:

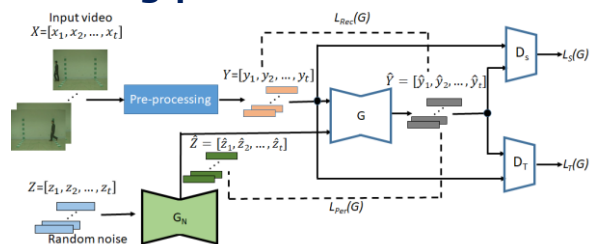
- Gait has become a type of personal ID
- Gait can be recognized from a distance



Posting videos increases the risk of privacy invasion

Methodology

Training phase



Pre-processing: Extracting the contour of the silhouettes from the input video

Noise Generator G_N : Generating the noise in gait distribution from the random noise

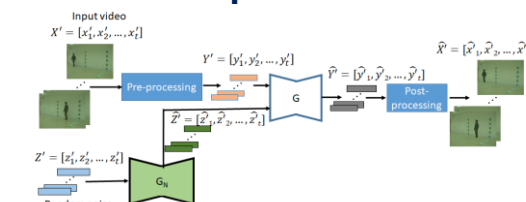
Discriminators: Two discriminators D_S and D_T are to distinguish the real gait and generated gait in spatial and temporal domain

Gait Generator G : Generating the anonymized gait from original gait and the noise

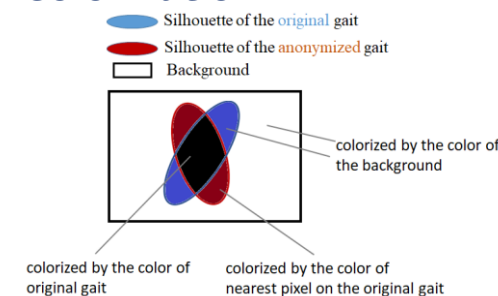
Loss function to train generator G $L(G)=L_{Rec}(G)+\alpha*L_{Pur}(G)+L_S(G)+L_T(G)$

Post-Processing: Colorizing the anonymized gait with the color of the original gait

Generation phase



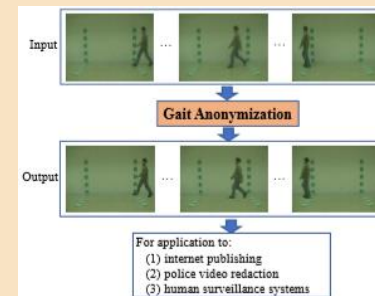
Colorization



Objective

Anonymizing gait:

- The anonymized gait **cannot be recognized** by the gait recognition systems
- The anonymized gait still **maintain the naturalness** (shape, color, movement)



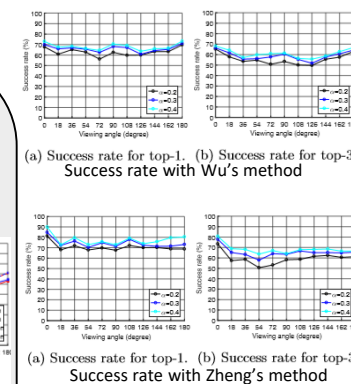
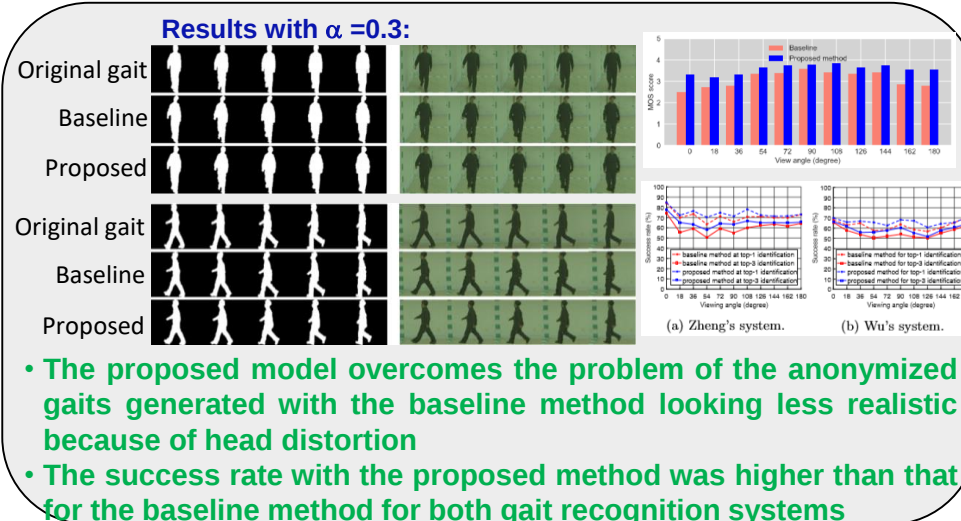
Results

Evaluate two metrics:

- **Naturalness:** Using MOS test
 - **Success rate:** The rate that the recognition system fails to recognize the anonymized gait.
- Two system are used: [S.Zheng et al. 2011], [Wu et al. 2018]
- **Baseline:** [Tieu et al. 2017]

Impact of α :

Original gait
 $\alpha=0$
 $\alpha=0.2$
 $\alpha=0.3$



When α increases, the naturalness trends to decrease and the success rate increases