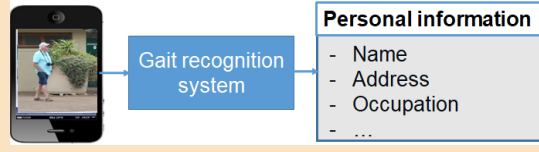


## Motivation

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

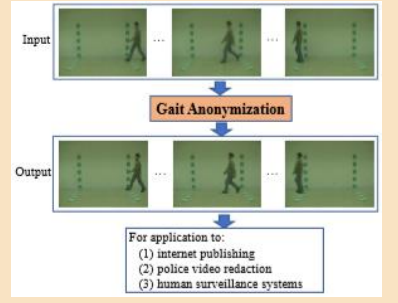


Posting videos increases the risk of privacy invasion

## Objective

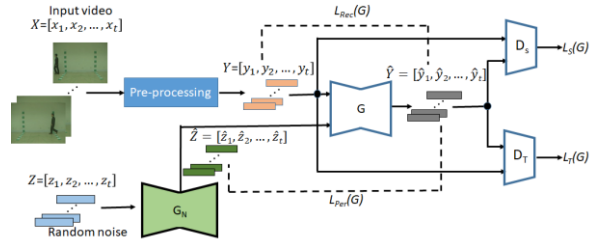
### Anonymizing gait:

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



## Methodology

### Training phase



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

**Noise Generator GN:** Generating the noise in gait distribution from the random noise

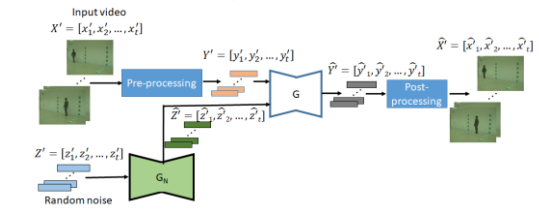
**Discriminators:** Two discriminators DS and DT are to distinguish the real gait and generated gait in spatial and temporal domain

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

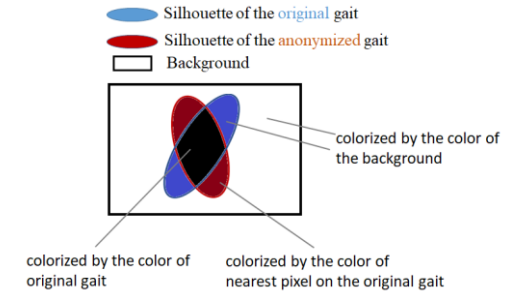
Loss function to train generator G  $L(G) = L_{Rec}(G) + \alpha * L_{Pur}(G) + L_S(G) + L_T(G)$

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

### Generation phase



### Colorization



## 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 alpha:



### Results with alpha = 0.3:

Original gait		
Baseline		
Proposed		

Original gait

Baseline

Proposed

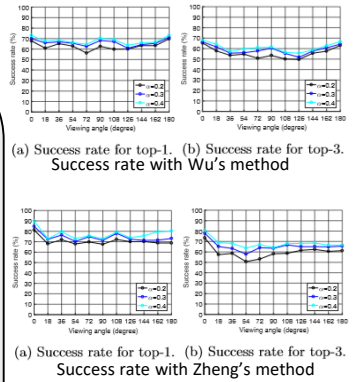
Original gait

Baseline

Proposed

(a) Zheng's system. (b) Wu's system.

- **The proposed model overcomes the problem of the anonymized gait generated with the baseline method looking less realistic because of head distortion**
- **The success rate with the proposed method was higher than that for the baseline method for both gait recognition systems**



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