Traffic Signal Light Color Discrimination for Road-Crossing Support of Pedestrians

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Keywords Life assist technology (90150)

Research Topics

- Recognition of pedestrian traffic signals
- Object detection
- Visual system to help visually impaired or blind people

Research Seeds

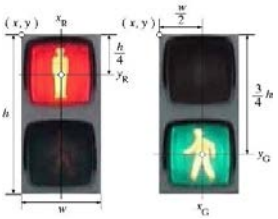
In this study, methods by which visually impaired people can discriminate the color state of pedestrian traffic signals have been proposed. The method assumes situations in which one faces traffic signals and uses the crosswalk.

Pedestrian traffic signals in each frame image of video streams are detected using a Haar classifier with the AdaBoost learning process. To discriminate the light color of pedestrian traffic signals, only the brightness values of a centered pixel in each lamp device is used.

We used 16,209 frame images to evaluate our method. As a result, the respective correct discrimination rates were 99.7% for red traffic lights, 97.7% for green traffic lights, and 93.6% for the extinction of lights.

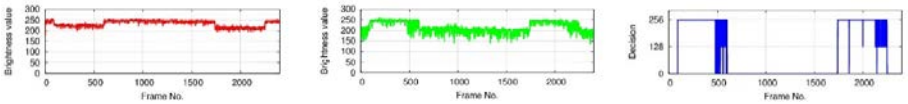
(a) (b)

Fig. 1. Red (a) and green (b) pedestrian traffic signals.



(a) (b)

Fig. 2. Coordinates of a centered pixel in each red (a) and green (b) light.



(a) (b) (c)

Fig. 3. Examples of video analysis results. Temporal variation of red (a) and green (b) light. (c) Results of color discrimination obtained from (a) and (b).

Related Technology

- Machine learning
- Image processing
- Feature extraction