Computer Vision in Smart City

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Abstract

- Smart city is a city that uses information and communication technology to meet the demands of its citizens. Community involvement in processes is a must for the smart city.
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By 2040, 65% of the world's population is expected to live in large and medium-sized cities.

The number of cities in the world with populations of over one million is rapidly expanding.
2. Smart city factors

- Application of a wide range of digital and electronic technologies
- Application of information and communication technology to enhance living and working environments
- Creating platforms that will bring people and ICT together to foster innovation and foster knowledge.
3. Requirements

- Smart economy
- Smart human
- Smart mobility
- Smart environment
- Smart life
4. What is computer vision
5. Application of computer vision in smart city

- Authentication in urban areas such as subway, airport, municipality, cinema, etc. to provide faster urban services.
5.1. Human authentication based on computer vision

_authentication means automatically recognizing a person's identity by comparing the parameters of the person in question and comparing it with the information in the database. [1-2]

Figure 1. General flowchart of human identification
5.1. Human authentication based on computer vision

Biometrics

Physiological
- face
- fingerprint
- hand
- iris
- DNA

Behavioral
- keystroke
- signature
- voice

- Finger print
- Hand
- Iris
- Face
- etc
Security

- Vehicle license plate identification
- Face recognition at high-end destinations like airports. [3-4]
5.2. Vehicle license plate identification

- Identifying a license plate means automatically reading a license plate number to check the driver's behavior from a breach or analysis perspective.

Figure 2. General flowchart of vehicle license detection approaches
Increase input data to facilitate and increase accuracy of urban process.
Traffic

- Vehicle counting to measure traffic volume
- Investigation of driving quality for behavioral analysis [5]
- Investigating disused traffic plans
Rapid diagnosis of non-standard functioning of human health
5.3. Driver's drowsiness diagnosis

- Driver behavior analysis including eye and neck function over a specified period of time
- An algorithm for the diagnosis of drowsiness based on parameters such as closed eyes, synchronization of closed eyes, number of consecutive frames closed, eyelid drop, number of non-consecutive frames, etc.

[6-7]

Figure 3. General flowchart of driver’s drowsiness diagnosis approaches
Using smart cars to facilitate transportation [8]
6. Requirements for computer vision systems

- Hardware (sensors, actors, chip, …)
- Software
- Communication (network, internet, …)
- Storage (physical, cloud, …)
References


Thanks for your Attentions