近期工作汇报

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Outlines

- Reeasrch Background

- Prepareations

- Reeasrch Objectives

- Reeasrch Methods

Research Background

- Traffic safety

- Traffic accidents

- Human mistakes

Research Background

- Advance Driver Assistance Systems

- Driver drowsiness and/or distraction

- Based on visual features...

Prepareations

Research interests

- intelligent transportation systems,

- driver assistant systems,

- driver behavior analysis,

- machine learning and its applications

Prepareations

- Theoretical foundations

- Programming skills

Reeasrch Objectives

➢ Robust driver head pose and gaze estimation algorithms

➢ Light and efficient Deep Nets for classification tasks

➢ Driver fatigue and distraction detection joint-training framework

➢ Design and implementation of a driver behavior analysis system

Reeasrch Objectives

Robust?

- complex environment
- individual diversity,
- pose uncertainty,
- motion blur...

Reeasrch Objectives

Light and efficient Deep Nets

- computing intensity?

- real time detection

Reeasrch Objectives

Joint-training framework

– foundations: head pose and gaze estimation

– detecting fatigue and distraction separately?

Driver behavior analysis system

● real-time, reliable and robust

Reeasrch Methods

1. Deep learning
   – representations of data
   – high level abstractions
   – multiple processing layers
   – multiple linear and non-linear transformations

   deep learning is used for feature extraction and representations of data.

Reeasrch Methods

- 2. Bayesian network
  - a probabilistic graphical model
  - treating image processing and sub-activities recognition as preprocessing step

  To integrate partial information for inference, Bayesian Network would be a good choice.

Reeasrch Methods

- 3. Fuzzy fusion
  - People are more used to fuzzy concept rather than the accurate measurement.
  - a driver uses linguistic expressions such as very far, far, close, or very close to interpret distance to hazards

  Fuzzy logic will be brought in our driver behavior analysis system.

Thank you

Experiences

- The earlier, the better.