Synthesizing Personalized Training Programs for Improving Driving Habits via Virtual Reality

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Synthesizing Personalized Training Programs for Improving Driving Habits via Virtual Reality
Outline

- Motivation
- Framework
- Scene Modelling
- Pre-Evaluation
- Route Synthesis
- Training
- Results
Motivation
Motivation
Framework
Framework of Our Approach
Scene Modelling
Scene Modelling

Cars

Pedestrians
Scene Modelling

Crossroads

A Street with Four Lanes
Pre-evaluation
Traffic Events

Traffic Events about Pedestrians

Traffic Events about Turning
Traffic Events

Traffic Events about Changing Lane

Traffic Events about the Front Car
City Used for Evaluation
Driving Habits

Look at Rear-view Driving Mirror before a Turn

Look at Rear-view Driving Mirror before Changing Lane
Driving Habits

Signal before a Turn

Signal before Changing Lane
Driving Habits

Stop for Pedestrians

Reduce Speed When Passing a Crossroad
Route Synthesis
Route Synthesis

(a) Initial map
(b) Cells replaced by nodes
(c) A synthesized route
Other Synthesis Results

(a) More Turns

(b) Fewer Turns

(c) Pass Specified Positions
Other Synthesis Results

![Graph 1: Cars Along the Route vs. Iterations](image)

![Graph 2: Pedestrians Along the Route vs. Iterations](image)
Training
City Used for Training
A Training Session

Warning: Pay Attention to the Pedestrian
Eye-Tracking Result from FOVE
Results
Results

- Personalized VR: Post-Evaluation 4.5, Pre-Evaluation 3, One Week Later 4.5
- Traditional VR: Post-Evaluation 3.5, Pre-Evaluation 3, One Week Later 3.5
- Video: Post-Evaluation 3, Pre-Evaluation 3, One Week Later 3
- Manual: Post-Evaluation 3, Pre-Evaluation 3, One Week Later 3
- None: Post-Evaluation 3, Pre-Evaluation 3, One Week Later 3
Contribution

• Propose an approach to synthesize personalized training programs.
• Demonstrate VR headsets can be employed for driving training.
• Evaluate our approach by comparing with other training methods.
THANK YOU!

- Project Page:

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