

title: Elemental Technologies for Automated Driving with Realistic Onboard Sensors: from Software to Hardware in the Real World and the Cyber World

code: 34qpi

time: 08:30-12:00

chair :

Dr. Yoshiko Kojima
Affiliation: Toyota Central R&D Labs.
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Cochair:

Dr. Ryuta Terashima
Affiliation: Toyota Central R&D Labs.
E-mail: ryuta@mosk.tytlabs.co.jp

Prof. Seiichi Mita
Affiliation: Toyota Technological Institute
E-mail: smita@toyota-ti.ac.jp

schedule :

08:30-09:20 Keynote speech: TBD (50min)

09:20-09:40 Real-Time Road Segmentation and Lane Estimation Using Deep Features and Extra Trees Regression (20min)
by Vijay John, Toyota Technological Institute

09:40-10:00 TBD (20min)
by TBD, Nagoya University

10:00-10:20 Small Imaging Depth LIDAR and DCNN-Based Localization for Automated Guided Vehicle (20min)
by Seigo Ito, Toyota Central R&D Labs., Inc.

10:20-10:40 3D point cloud map based vehicle localization using stereo camera (20min)
by Yuquan Xu, Toyota Technological Institute

10:40-11:00 Precise Dead-reckoning based on Multi-sensor Fusion (20min)
by Kojiro Takeyama, Toyota Central R&D Labs., Inc.

11:00-11:20 TBD (20min)
by TBD, Meijo University

11:20-11:40 Automatic Lane-Leave Map Generation Using Low-Cost Sensors in Urban Traffic Scenarios (20min)

by Chunzhao Guo, Toyota Central R&D Labs., Inc.

11:40-12:00 Freeway Merging in Congested Traffic based on Multipolicy Decision Making with Passive Actor Critic (20min)

by Tomoki Nishi, Toyota Central R&D Labs., Inc.

title: Human- Machine Interface in Intelligent Vehicles

code: 9wf53

time: 08:30-12:00 & 13:30-17:00

chair:

Prof. Rencheng Zheng

Affiliation: Dalian University of Technology

E-mail: my_topzrc@yahoo.co.jp

Cochair:

Prof. Zhenghai Gao

Affiliation: Jilin University

E-mail: gaozh@jlu.edu.cn

Asso. Prof. Kimihiko Nakano

Affiliation: The University of Tokyo

E-mail: knakano@iis.u-tokyo.ac.jp

Asso. Prof. Xuewu Ji

Affiliation: Tsinghua University

E-mail: jixw@tsinghua.edu.cn

Prof. Wenbin Hou

Affiliation: Dalian University of Technology

E-mail: houwb@dlut.edu.cn

schedule:

08:30-09:00 502 Morales-Alvarez, Walter; Gomez, Maria Jose; Fernandez, Gerardo; Garcia, Fernando; Olaverri-Monreal, Cristina Automatic Analysis of Pedestrians Body Language in the Interaction with Autonomous Vehicles

09:00-09:30 133 Linhui, Li; Zheng, Weina; Kong, LingChao; Ozguner, Umit; Hou, Wenbin; Lian, JingReal-time Traffic Scene Segmentation Based on Multi-Feature Map and Deep Learning

09:30-10:00 617 HU, Hongyu; Gao, Zhenhai; Yuhuan, Sheng; Naixuan, Zhu; Zhang, Yichi; Zhang, Jin A biosignal based driving experience analysis for curve road

10:00-10:30 Coffee Time

10:30-11:00 480 Yang, Bo; Zheng, Rencheng; Kaizuka, Tsutomu; Nakano, Kimihiko Analysis of Driver Behaviors while Using In-Vehicle Traffic Light with Partial Deployment of V2I Communication

11:00-11:30 308 Zhang, Mingheng; Zhai, Xiaojuan; Zhao, Guang; Chong, Tonghong; Wang, Zheng An Application of Particle Swarm Algorithms to Optimize Hidden Markov Models for Driver Fatigue Identification

11:30-12:00 94 Zhao, Yibing; Xiang, Xiumei; Zhang, Ronghui; Guo, Lie; Wang, Zheng
Longitudinal Control Strategy of Collision Avoidance Warning System for Intelligent
Vehicle Considering Drivers and Environmental Factors

12:00-13:30 Lunch

13:30-14:00 335 Yang, Kaiming; Zheng, Rencheng; Ji, Xuewu; Nishimura, Yosuke; Ando,
Kazuya Application of Stackelberg Game Theory for Shared Steering Torque Control in
Lane Change Maneuver

14:00-14:30 142 Wang, Zheng; Zheng, Rencheng; Kaizuka, Tsutomu; Nakano, Kimihiko
Driver-automation shared control: Modeling driver behavior by taking account of
reliance on haptic guidance steering

14:30-15:00 266 Liu, Tianwei; Zhou, Huiping; Itoh, Makoto; Kitazaki, Satoshi The Impact
of Explanation on Possibility of Hazard Detection Failure on Driver Intervention under Partial
Driving Automation

15:00-15:30 Coffee Time

15:30-16:00 481 HU, Hongyu; Zhu, Zheng; Gao, Zhenhai; Zheng, Rencheng Analysis on
Biosignal Characteristics to Evaluate Road Rage of Younger Drivers: A Driving Simulator
Study

16:00-17:30 Break

17:30-19:00 Welcome Reception

19:00-21:00 Party

paper:

Automatic Analysis of Pedestrian's Body Language in the Interaction with Autonomous
Vehicles

ID : 502

Longitudinal Control Strategy of Collision Avoidance Warning System for Intelligent Vehicle
Considering Drivers and Environmental Factors

ID:94

Real-time Traffic Scene Segmentation Based on Multi-Feature Map and Deep Learning

ID:133

Driver-automation shared control: Modeling driver behavior by taking account of reliance
on haptic guidance steering

ID:142

The Impact of Explanation on Possibility of Hazard Detection Failure on Driver Intervention
under Partial Driving Automation

ID:266

An Application of Particle Swarm Algorithms to Optimize Hidden Markov Models for Driver
Fatigue Identification

ID:308

Human- Machine Interface in Intelligent Vehicles

ID:335

Analysis of Driver Behaviors while Using In-Vehicle Traffic Light with Partial Deployment of
V2I Communication

ID:480

Analysis on Biosignal Characteristics to Evaluate Road Rage of Younger Drivers: A Driving Simulator Study

ID:481

A biosignal based driving experience analysis for curve road

ID:617

title: Parallel Vision in Intelligent Vehicles

code: 319nv

time: 08:30-12:00

chair:

Kunfeng Wang

Affiliation: Institute of Automation, Chinese Academy of Sciences, China and Qingdao

Academy of Intelligent Industries, China

E-mail: kunfeng.wang@ia.ac.cn

schedule:

invited talk1

Prof. Kunfeng Wang, Institute of Automation, Chinese Academy of Sciences

invited talk2

Miss. Hui Zhang, Institute of Automation, Chinese Academy of Sciences

invited talk3

Mr. Wenwen Zhang, Xi'an Jiaotong University

invited talk4

Mr. Yue Lu, Institute of Automation, Chinese Academy of Sciences

paper:

The ParalleEye-CS Dataset: Constructing Artificial Scenes for Evaluating the Visual Intelligence of Intelligent Vehicles

ID:544

title: IV Test Technologies

code: 5j6b2

time: 08:30-12:00

chair:

Qingwen Han

Affiliation: Chongqing University

E-mail: hqw@cqu.edu.cn

Cochair:

Jianmei Lei

Affiliation: China automotive engineering research institute

E-mail: leijianmei@caeri.com.cn

schedule:

invited talks:

"The test and validation challenges of sensor fusion for ADAS", Murali Ravindran,
Director, Automotive, Global Business Development, National Instruments

"The test certification approach for C-V2X terminal device," Yuming Ge, Doctor, China
Academy of Information and Communications Technology

"The test platform and evaluation standard system for self-driving car", Tao Chen,
Doctor, China automotive engineering research institute

presentation with papers:

Media Access Process Modeling of LTE-V-Direct Communication Based on Markov
Chain

ID:195

Application-based Performance Evaluation of Wireless Access in Vehicular Environment
using Broadcast Protocol

ID:199

EMC Test for Connected Vehicles and Communication Terminals

ID:396

Semi-virtual Test for ICVs in Automotive EMC Laboratory

ID:514

Study on the Test Scenarios of Level 2 Automated Vehicles

ID:564

title: Intelligent Vehicles for Education

code: Wnrxk

time: 08:30-12:00

chair:

Xiwei Liu

Affiliation: Chinese Academy of Sciences

E-mail: xiwei.liu@ia.ac.cn

cochair:

Jiehan Zhou

Affiliation: University of Oulu, Finland

E-mail: jiehan.zhou@oulu.fi

Xiaoyan Gong

Affiliation: Chinese Academy of Sciences

schedule:

title: Decision-Making and Control on Driver- Automation Interaction

code: ca238

time: 08:30-12:00

chair:

Wenshuo Wang

Affiliation: University of Michigan at Ann Arbor, USA

E-mail: wwsbit@gmail.com, wenshuow@umich.edu

cochair:

Xiaoxiang Na

Affiliation: University of Cambridge, UK

E-mail: xnhn2@eng.cam.ac.uk

Jianwei Gong

Affiliation: Beijing Institute of Technology, China

E-mail: gongjianwei@bit.edu.cn

Wei Zhan

Affiliation: University of California at Berkeley, USA

E-mail: wzhan@berkeley.edu

schedule:

invited talk:

An Android Application for Road Freight Vehicle In-Service Monitoring.

Name: Xiaoxiang Na

paper:

Development and Evaluation of Two Learning-Based Personalized Driver Models for Pure Pursuit Path-Tracking Behaviors

ID:114

Research on Intelligent Merging Decision-making of Unmanned Vehicles Based on Reinforcement Learning

ID:352

Transfer Learning for Driver Model Adaptation via Modified Local Procrustes Analysis

ID:430

Influence analysis of autonomous car' cut-in behavior on human drivers in a driving simulator

ID:433

title: 2018 IEEE/IFAC Conference on Blockchain and Knowledge Automation

code: 5up3q

time: 08:30-12:00 & 13:30-17:00

chair:

Fei-Yue Wang

Affiliation: Chinese Academy of Sciences, China

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cochair:

Yong Yuan

Affiliation: Chinese Academy of Sciences

E-mail: yong.yuan@ia.ac.cn

Jason Jun Zhang

Affiliation: University of Denver, USA

E-mail: Jun.Zhang@du.edu

Kimon Valavanis

Affiliation: University of Denver, USA

E-mail: Kimon.Valavanis@du.edu

Philip Chen

Affiliation: The University of Macau, China

E-mail: Philip.Chen@ieee.org

schedule:

An Overview of Smart Contract: Architecture, Applications, and Future Trends

ID:179

Performance Analysis of Consensus Algorithm in Private Blockchains

ID:340

A Bibliometric Analysis of Blockchain Research

ID:368

Transaction Queueing Game in Bitcoin BlockChain

ID:371

Economic Issues in Bitcoin Mining and Blockchain Research

ID:375

Organizational Management using Software-defined Robots based on Smart Contracts

ID:376

Blockchain Based Provenance for Agricultural Products: A Distributed Platform with Duplicated and Shared Bookkeeping

ID:553

title: Security and Privacy Protection for Internet of Vehicles

code: 8wgj2

time: 08:30-12:00

chair:

Jian Wang

Affiliation: Jilin University

E-mail: wangjian591@jlu.edu.cn

cochair:

Yuming Ge

Affiliation: China Academy of Information and Communications Technology (CAICT)

E-mail: geyuming@caict.ac.cn

schedule:

title: Scene Understanding for Automated Driving Systems

code: e434d

time: 08:30-12:00

chair:

Jianru Xue

Affiliation: Xi'an Jiaotong University

E-mail: jrxue@mail.xjtu.edu.cn

cochair:

Ming Yang

Affiliation: Shanghai Jiaotong University

E-mail: mingyang@sjtu.edu.cn

Huijing Zhao

Affiliation: Peking University

E-mail: zhaohj@cis.pku.edu.cn

Jianwu Fang

Affiliation: Xi'an Jiaotong University

E-mail: fangjianwu@mail.xjtu.edu.cn

schedule:

invited talks:

Guofeng Zhang, Visual SLAM and Its Application, Zhejiang University,
zhangguofeng@cad.zju.edu.cn (40min)

Xin Xu, Visual Saliency Detection and Sequence Learning for Autonomous Driving,
National University of Defense Technology, xinxu@nudt.edu.cn (40min)

presentation with papers:

An Efficient Hierarchical Convolutional Neural Network for Traffic Object Detection
ID:416 (30min)

Di Wang, LiDAR-based Place Recognition with Application on Large-scale Mapping,
Xi'an Jiaotong University, Email: de2wang@stu.xjtu.edu.cn (30min)

Understanding 3D Semantic Structure around the Vehicle with Monocular Cameras
ID:506 (30min)

Traffic-Sign Spotting in the Wild via Deep Features
ID:556 (30min)

title: The 5th Workshop on Naturalistic Driving Data Analytics

code: p67bw

time: 13:30-17:00

chair:

Huijing Zhao

Affiliation: the Key Lab of Machine Perception (MOE), Peking University, Beijing, China.

E-mail: zhaohj@cis.pku.edu.cn

cochair:

Donghao Xu

Affiliation: the Key Lab of Machine Perception (MOE), Peking University, Beijing, China.

E-mail: xudonghao@pku.edu.cn

Schedule:

Time:	13:30-14:10	
Title:	On Annotation, Augmentation & Analytics of Naturalistic Data for Autonomous Driving	
Speakers:	Name	Affiliation
	Mohan Trivedi	University of California, San Diego
Abstract:	Intelligent vehicle technology has made dramatic strides in the past decade. This will lead to deployment of self-driving automobiles on roadways, in not so distant future. In spite of this promise, we are also realizing that there are open research issues which need resolution to assure safe, smooth and highly reliable performance of automated vehicles. A major contributing factor in the advancements of highly automated vehicle is novel data-driven approaches that use multimodal data streams captured in the real world naturalistic context. This allows development of algorithms to learn behaviors of vehicles and human agents and to accurately predict intentions and interactivity patterns of all intelligent agents. In this presentation we will highlight three important and sometimes understated elements associated with naturalistic driving based research. These elements, annotations, augmentation and analytics, require careful consideration and systematic resolution to derive useful insights and scientific findings. We will discuss these issues as encountered in the development of human-centered	

	autonomous vehicles, to assure safe and smooth driving based on behavior predication of agents surrounding a vehicle as well as that of humans riding in the vehicles.	
Time:	14:10-14:50	
Title:	Vehicle-Pedestrian Encountering Scenarios and Pedestrian Behavior Recognition in Naturalistic Driving Environment	
Speakers:	Name	Affiliation
	Renran Tian	Indiana University-Purdue University Indianapolis
	Yaobin Chen	Indiana University-Purdue University Indianapolis
	David Good	School of Public and Environmental Affairs, Indiana University - Bloomington
Abstract:	<p>Focusing on pedestrian behaviors, standard vehicle-pedestrian conflict scenarios, and the development of pedestrian crash mannequins, the Transportation Active Safety Institute (TASI) at Indiana-University Purdue-University Indianapolis (IUPUI) carried out one large-scale naturalistic driving study. Through a multi-step data analysis and annotation process, TASI-110 car naturalistic driving database has been constructed. In this presentation, a brief introduction of the study is provided including the scope of the data collection, the raw data collected, the construction process, and the finalized database structure. With the database, several completed studies from TASI researchers are firstly presented towards the vehicle-pedestrian encountering scenarios, including pedestrian walking speed calculation, nighttime lighting condition modeling, pedestrian appearance locations and TTC calculation, and pedestrian clothing color investigation. Secondly, the research for pedestrian pose tracking and behavior recognition from naturalistic driving videos is introduced. The proposed method will not only detect pedestrians on the road, but also generate their skeleton models describing head, limb, and trunk movements. Based on these more detailed movements of body parts, the proposed method is designed to track poses of pedestrians and enable automated pedestrian gesture reading and non-verbal interactions between autonomous vehicles and pedestrians.</p>	
Time:	14:50-15:10	
	Coffee break with demo & posters	
Time:	15:10-15:50	
Title:	Automan: Democratizing Self-Driving AI with Open Research Corpus	
Speakers:	Name	Affiliation
	Shunya Seiya	Nagoya University
	Yuto Jumonji	The University of Tokyo
	Hidenaga Ushijima	The University of Tokyo
	Abraham Monrroy	Nagoya University
	Yuki Tsuji	The University of Tokyo
	Kazumasa Sakiyama	The University of Tokyo
Eiji Sekiya	Tier4	

	Yuki Iida	Tier4
	Shinpei Kato	The University of Tokyo; Tier4
	Kazuya Takeda	Nagoya University; Tier4
Abstract:	<p>With a development of deep learning technology, a demand for annotated images and point cloud data is increasing. Especially, in the field of autonomous driving, the technology are applied to perform more accurate object detection and recognition. To build deep learning model, there are 3 steps as follows : driving data collection, manually annotation, and training models. However, those steps have 3 problems as follows. 1) difficulty of driving data management, 2) laborious setup and development of annotation tools for each annotator and 3) difficulty of hyper-parameter and training result management during building models. On the other hands, in this presentation, we proposed "Automan" that a deep learning model construction system for autonomous driving that has integrated function from data storage and annotation tools to deep learning environment. Automan provides an integrated function that big storage for storing driving data, annotation tools, deep learning environment, and the result sharing as a cloud service. Users can create these accounts and use these functions anytime and anywhere. In addition, Automan provides a group function that allows creation of shared storage and progress management. It is possible to annotate large-scale data with multiple people in parallel.</p>	
Time:	15:50-16:30	
Title:	Scene-Aware Driving Behavior Modeling	
Speakers:	Name	Affiliation
	Donghao Xu	Peking University
	Huijing Zhao	Peking University
Abstract:	<p>To develop an autonomous driving car that travels in harmony with human driving ones, the system should be able to predict the behavior of surrounding vehicles and interact with them as human drivers. Thus, human driving behavior should be modeled by taking the influence of environmental vehicles into account, i.e., the surrounding dynamic traffic scene of a vehicle should be first understood and then a behavior is generated accordingly to achieve a human-like reaction. This research focuses on driving behavior modeling in real and complex traffic scenes, mainly considering traffic scene understanding in various time scales and scene induced impacts on driving behaviors. Concretely, main topics of the research are as follows: 1) A multi-level trajectory analysis approach is proposed for understanding scene vehicle behaviors. The stationary regions are first learned using a nonparametric Bayesian model so that the trajectory points are discretized, then main paths are discovered using recursive frequent subsequence mining and finally trajectories are probabilistically modeled by integrating information of path level and regional level. 2) A scene-aware probabilistic car-following model is proposed, which incorporates intra-driver heterogeneity and influence of scene vehicles. The car-following process is modeled using a dynamic Bayesian network, where a discrete hidden variable is introduced to represent various</p>	

	<p>driver states, each of which corresponds to a basic car-following model, and temporal transition between them is set to be dependent on surrounding vehicles. 3) A human-like trajectory planner for autonomous vehicles is proposed, which achieves simultaneous human-like behavior decision and trajectory planning. A behavioral incentive cost is proposed based on a human lane changing decision model, enabling the overall cost function to imitate human drivers' behavioral decisions; a method of learning cost parameters from driving data is proposed, enabling the planner to achieve human-like trajectory selection.</p>	
Time:	16:30-17:30	
Title:	Round Table Discussion: How to effectively collect/share/utilize the Naturalistic Driving Data – Challenges & future of NDS activities	
Chair:	Name	Affiliation
	Pujitha Gunaratne	Toyota Motor North America

title: Intelligent Transportation and Autonomous Vehicles

code: gm31n

time: 13:30-17:00

chair:

Li huiyun

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co-chair:

Peng lei

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Sun tianfu

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Wang zheng

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schedule:

- 14:00-14:10 Opening speech (Huiyun Li)
- 14:10-14:30 A Security Model for Intelligent Vehicles and Smart Traffic Infrastructure (Kumar)
- 14:30-14:50 Real-time Pedestrian and Vehicle Detection for Autonomous Driving (Zhiheng Yang)
- 14:50-15:10 Improved Sliding-Mode On-line Adaptive Position Control for AMT Clutch Systems Based on Neural Networks (Jie Zou)
- 15:10-15:20 Coffee break
- 15:20-15:40 Automated Toll Gate Passing (Zhonglin Xu)
- 15:40-16:10 The Road Regional Hazard Level Evaluation Method Based on Ising Model (Qingwen Han)
- 16:10-16:40 Challenges to develop autonomous vehicles (Huiyun Li)
- 16:40-17:00 Communication & Photo

paper:

A Security Model for Intelligent Vehicles and Smart Traffic Infrastructure

ID:227

Real-time Pedestrian and Vehicle Detection for Autonomous Driving

ID:369

Improved Sliding-Mode On-line Adaptive Position Control for AMT Clutch Systems Based on Neural Networks

ID:397

Automated Toll Gate Passing

ID:402

title: Multi-Sensor Fusion and Extended Object Tracking for Autonomous Vehicles & Intelligent Driving for Autonomous Driving Vehicles & Communication for Connected and Cooperative Driving

code: 9i78c & 7u9g1 & 27iv2

time: 13:30-17:00

chair:

Karl Granström

Affiliation: Chalmers University of Technology, Sweden

E-mail: karl.granstrom@chalmers.se

Xinyu Zhang

Affiliation: Tsinghua University, China

E-mail: xyzhang@tsinghua.edu.cn

Pr Jean-Philippe LAUFFENBURGER

Affiliation: Université de Haute-Alsace (Mulhouse)

E-mail: jean-philippe.lauffenburger@uha.fr

schedule:

Bayesian Framework for Autonomous Vehicle Localization

ID:572

Multi-Objective Adaptive Cruise Control Strategy Based on Variable Time Headway

ID:138

Lane Detection and Road Surface Reconstruction Based on Multiple Vanishing Points

ID:517

Low Latency V2X Applications and Network Requirements: Performance Evaluation

ID:383

title: Connected and Automated Vehicles

code: s422g

time: p.m.

chair:

Ge Guo

Affiliation: Northeastern University, China

E-mail: geguo@yeah.net

co-chair:

Shengbo Eben Li

Affiliation: Tsinghua University, China

E-mail: lisb04@gmail.com

Yantao Tian

Affiliation: Jilin University, China

E-mail: tianyt@jlu.edu.cn

Hongbo Gao

Affiliation: Tsinghua University, China

E-mail: ghb48@mail.tsinghua.edu.cn

schedule:

Invited talks without papers:

“Dynamical modeling and distributed control of multiple connected vehicles”, Shengbo Li, Tsinghua University, China

“Hazard-evaluation-oriented Moving Horizon Parallel Steering Control for Driver-Automation Collaboration during Automated Driving”, Hongyan Guo, Jilin University, China, guohy11@jlu.edu.cn

“Situational Assessments Based on Uncertainty-Risk Awareness in Complex Traffic Scenarios”, Hongbo Gao, Tsinghua University, China

Presentation with accepted papers:

220. Yangyang Guo, Jun Liu, Linhuan Song, Hongyan Guo*, Yunfeng Hu, Hong Chen. Hazard-Evaluation-Based Driver-Automation Switched Shared Steering Control for Intelligent Vehicles.

247. Ali Aliedani*, Seng Loke. Decision-Theoretic Cooperative Parking for Connected Vehicles: An Investigation

358. Kyushik Min, Hayoung Kim, Kunsoo Huh*. Deep Q Learning Based High Level Driving Policy Determination

81. Liyuan Wang*, Ge Guo, Wei Yue. Vehicle Platoon Control with Communication Scheduling.

204. Shixi Wen*, Ge Guo, Yiwen He, Ligang Wu, Qian Zhou. Observer-based Cooperative Adaptive Cruise Control of Vehicular Platoons with Random Network Access.

title: Cooperative Perception among Multiple Intelligent Vehicles

code: y8dc2

time: 13:30-17:00

chair:

Zhe XuanYuan

Affiliation: Beijing Normal University- Hong Kong Baptist University United International College, China

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co-chair:

Long Chen

Affiliation: Sun Yat-sen University, China

E-mail: chen46@mail.sysu.edu.cn

Kai Huang

Affiliation: Sun Yat-sen University, China

E-mail: huangk36@mail.sysu.edu.cn

Xuemin Hu

Affiliation: Hubei University, China

E-mail: huxuemin2012@hubu.edu.cn

Yun-xiao Shan

Affiliation: Sun Yat-sen University, China

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schedule:

invited talk:

High Dynamic Range Imaging for Stereo Vision, by Mr. Alexander Gillert, Sun Yat-sen University

Paper presentation:

Online Cooperative 3D Mapping for Autonomous Driving, by Dr. Zhe XuanYuan, Beijing normal university - Hong Kong baptist university united international college

Paper ID 282

A robust look-ahead distance tuning strategy for the geometric path tracking controller, by Dr. Yunxiao Shan , Wuhan University

PaperID 581

title: Driver Vigilance Estimation for Vehicle Active Safety

code: 16qc3

time: 13:30-17:00

chair:

Bao-Liang Lu

Affiliation: Shanghai Jiao Tong, China

co-chair:

Chin-Teng Lin

Affiliation: University of Technology Sydney, Australia

Abstract:

Vigilance decrement or attention lapse has long been recognized as the critical factor responsible for thousands of deaths and injuries each year in the public traffic community. Driving tasks, particularly truck driving and high-speed trains, require sustained high vigilance. However, efficient techniques for quantifying driver vigilance levels are still lacking, which leads to the inability to provide active feedback for active safety systems. Although considerable progress has been achieved in various areas over the past decades, accurately estimating driver vigilance in real-world driving environments is still difficult. The main reason for this difficulty is that vigilance states are intrinsic mental states that involve temporal evolution rather than a time point. It is difficult to evaluate mental states without using an intrusive stimulus or behavior probe. Moreover, real-world applications require continuous vigilance estimation with high temporal resolution. Vigilance decrement is typically accompanied by both external behaviors, such as head nodding, yawning, and eye closure, and internal physiological changes. Various approaches based on these cues have been developed. Among these various modalities, physiological signals have been found to be relevant for different vigilance levels. However, how to identify reliable and valid biomarkers remains a challenge within the research community. The aim of this workshop is to give a forum for researchers to present the state-of-the-art of neural mechanism, modelling, devices, and systems for driver vigilance estimation and to exchange ideas and issues.

schedule:

9:00-09:10 Organizer's introduction

9:10-10:10 Keynote: Brain Computer Interface (BCI) for Driving Cognition
(Chin-Teng Lin, University of Technology Sydney, Australia)

10:10-10:30 Coffee break

10:30-11:00 Invited talk: Prediction of Driver's Eye Fixation Distribution with Visual Attention Model

(Yongjie Li, University of Electronic Science and Technology of China, China)

11:00-11:30 Invited talk: Driver Distraction Detection Using Multiple Kernel Learning
(Yan Yang, Northwestern Polytechnical University, China)

11:30-12:00 Invited talk: Noncontact Stress Monitoring and Sleep Analysis using Millimeter Wave Radar

(Jin Zhang, Southern University of Science and Technology, China)

12:00-13:30 Lunch break

13:30-14:00 Invited talk: EEG-based spatio-temporal interaction analysis for driver fatigue assessment

(Fengyu Cong, Dalian University of Technology, China)

14:00-14:30 Invited talk: Assessment of driving fatigue based on brain connectivity

(Wanzong Kong, Hangzhou Dianzi University, China)

14:30-15:00 Coffee break

15:00-16:00 Keynote: Multimodal Vigilance and Sleep Quality Estimation Using Transfer Learning

(Bao-Liang Lu, Shanghai Jiao Tong University, China)

16:00-16:30 Summary and discussion round with all speakers

paper:

title: CPS-Based Modeling and Optimization Control of Renewable Energy Vehicles

code: x6225

time: 13:30-17:00

chair:

Teng Liu

Affiliation: Ph.D., Research Fellow, University of Waterloo, Canada

E-mail: tengliu17@gmail.com

co-chair:

Yuan Zou

Affiliation: Ph.D., Professor, Beijing Institute of Technology, China

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Xudong Zhang

Affiliation: Ph.D., Assistant Professor, Beijing Institute of Technology, China

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Huilong Yu

Affiliation: Ph.D., Research Fellow, University of Waterloo, Canada

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schedule:

'Parallel Reinforcement Learning for Hybrid Electric Vehicles', Teng Liu, University of Waterloo, Canada, e-mail: tengliu17@gmail.com

'Sizing and control of Hybrid Energy Storage System for Electric Vehicles', Huilong Yu, University of Waterloo, Canada, e-mail: huilong.yu@polimi.it

'Ecologic Cruise Control of Electric Vehicles Considering Road Slope', Weichao Zhuang, Southeast University, China, e-mail: wezhuang@seu.edu.cn

'Connected Vehicle Following Modeling and Control', Yuan Zou, Beijing Institute of Technology, China, e-mail: zouyuan@bit.edu.cn

"Adaptive Multivariable Super-Twisting Control for Lane Keeping of Autonomous Vehicles with Differential Steering", Chuan Hu, University of Waterloo.

paper:

Adaptive Multivariable Super-Twisting Control for Lane Keeping of Autonomous Vehicles with Differential Steering

ID:182

Reinforcement Learning-Based Predictive Control for Autonomous Electrified Vehicles

ID:203

Multi-objective Optimal Sizing and Real-time Control of Hybrid Energy Storage Systems for Electric Vehicles

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