techact.ITSS

http://ta.itss-ieee.org

Technical Committee on:

"Naturalistic Driving Data Analytics"

https://ta.itss-ieee.org/naturalistic-driving-data-analytics/

TC Report

2019

Co-Chair (corresponding chair):

Dr. Pujitha Gunaratne
(pujitha.gunaratne@toyota.com)

Co-Chair:

Prof. Kazuya Takeda
(kazuya.takeda@nagoya-u.jp)

Organized Events and Activities

1. Conferences

Year	Conference name	Organizers & functions

2. Workshops and Tutorials

Year	Workshop / tutorial title	At Conference	Organizers (TC members)	Participants (estimated #)
2014	1st workshop on Naturalistic Driving Study (Naturalistic Driving Data Analytics)	IV-2014,	Mohan Trivedi/ Pujitha Gunaratne	50
2015	2nd workshop on Naturalistic Driving Study (Naturalistic Driving Data Analytics)	IV-2015,	Pujitha Gunaratne/ Kazuya Takeda	50
2016	3rd workshop on Naturalistic Driving Study (Naturalistic Driving Data Analytics)	IV-2016	Selpi/ Helena Gellerman/ Chiyomi Miyajima	17
2017	4th Workshop on Naturalistic Driving Data Analytics	IV-2017	Takashi Bando/ Chiyomi Miyajima/ Pujitha Gunaratne	25
2018	5th Workshop on Naturalistic Driving Data Analytics	IV-2018	Huijing Zhao/ Donghao Xu	71
2019	6th Workshop on Naturalistic Driving Data Analytics	IV-2019	Pujitha Gunaratne/ Kazuya Takeda	20

6th Naturalistic Driving Data Analytics (NDDA) workshop was held at the IEEE Intelligent Vehicles Symposium in Paris this year. The workshop discussed the issues in the field of Intelligent Vehicles dealing with new developments in theory and applications, vehicle technologies and demonstrations related to naturalistic driving data collected in real-world situations. There were 3 invited speakers and 2 contribution papers presented at the workshop.

Workshop Program

Time	Title	Speaker(s)	Affiliation
13:30 – 14:05	[Invited Talk] "Will you be ready to take over when your autonomous vehicle need help?"	Prof. Mohan Trivedi	University of California San Diego
14:05 – 14:40	[Invited Talk] "Driver Attention in Partial Automation"	Dr. Chris Schwarz	University of Iowa
14:40 – 15:15	[Invited talk] TBD	Dr. Yoshiki Ninomiya	TierIV/ Nagoya University, Japan
15:15 – 15:40	**Coffee Break**		
15:40 – 16:05	[Contribution Paper] "A Lidar-based Dual-level Virtual Lanes Construction and Anticipation of Specific Road Infrastructure Events for Autonomous Driving"	Ferit Uzer, Amaury Breheret, Emilie Wirbel, Rachid Benmokhtar	Valeo Vision - Driving Assistance Research (DAR), France
16:05 – 16:30	[Contribution Paper] "Analysis of taxi driving behavior and driving risk based on trajectory data"	Jing Fan, Ye Li, Yuanlin Liu, Yu Zhang, Changxi Ma	Tongji University, China
16:30 – 17:30	**Panel Discussion**		

3. Organized Sessions

Year	Invited / special technical session title	Conference Host	Organizers / Moderator

4. Special Issues in Journals or Editor of Other Publications

Year	Title	Journal	Editor

5. Book and Book chapters

Year	Title	Journal / Publisher	Editors or Guest-Editors

Year	Title	Journal / Publisher	Editors or Guest-Editors

6. Competitions

Year	Title	Object	Organizer

7. Other Activities: Revision and expansion of the TC

The co-chairs and key members of the Technical Committee have discussed to revise the scope of the TC to address the research needs of the domain of interest. In a first step of this activity, the organizers of the NDDA workshop at IV'2019 met with the organizers of the Data Driven Intelligent Vehicle Applications (DDIVA), since the scope of both workshops had overlapping interests. As a result of multiple discussions, it was proposed to change the name of the Technical Committee to **Data Analytics and Intelligent Systems for Advanced Driving and Mobility (DAISY)**, to properly address the research areas of interest. The proposed new scope and technical topics are follows.

Scope:

Understanding driving behaviors and traffic flow dynamics in real world driving context are important for the development of intervening technologies for Intelligent Vehicles. Understanding of driver state, driving characteristics in different modes of automated driving, and the environment of driving are focused areas to enhance the capabilities of intervention for safe and effective deployment of such technologies.

Naturalistic Driving data collected from various onboard sensors and instrumented devices provide a wealth of information and a snapshot of real-world driving situations. However, these data streams are inherently heterogeneous due to the inhomogeneous nature of sensor suites and data collection platforms used. Therefore, our intention is to investigate intelligent data analytic approaches to produce meaningful inferences from real-world

driving data for the safe deployment of intervening technologies in advanced driving and mobility applications.

Technical topics:

- Advanced and Automated Driving Systems
- Naturalistic driving data collection and sharing
- Robust data compression and automated annotation
- Understanding naturalistic driving behavior and modeling
- Driver-Vehicle Interaction, Driver- ADS Interaction, Integration of HMI
- Accident risk analysis, reconstruction, modeling, and intervention using real driving data
- Use/integration of driving models in intelligent vehicle system design
- Collaborative driving algorithms
- Decision making algorithms for ADS

The member base of the Technical Committee was also expanded. Following are the members of the TC.

1. Assoc. Prof. Pinar Boyraz Baykas, Chalmers University of Technology, Gothenburg, Sweden
2. Assoc. Prof. Chiyomi Miyajima, Daido University, Japan
3. Dr. Selpi, Chalmers University of Technology, Sweden
4. Dr. Takashi Bando, DENSO International America, Inc., USA
5. Prof. Alois Knoll, Chair of Robotics, Artificial Intelligence and Real-time Systems, TUM Department of Informatics, Technical University of Munich
6. Dr. Udara Manawadu, Toyota Research Institute Advanced Development, Japan
7. Prof. Nazim Kemal Ure, Istanbul Technical University- AI Center and Aeronautical-Aerospace Engineering Dept.
8. Assoc. Prof. Volkan Sezer, Istanbul Technical University- Control and Automation Engineering Dept.
9. Prof. Tankut Acarman, Galatasaray University- Computer Science Dept
10. Asst. Prof. Sinan Oncu, Bogazici University- ME Dept.
11. Asst. Prof. Gilulio B. Piccinini, Chalmers Uni of Tech- M2 Dept- Vehicle Safety Division.
12. Dr. Eleonora Andreotti, Chalmers University of Technology, Sweden
13. Asst. Prof. Eren Erdal Aksoy, Halmstad University, Sweden
14. Asst. Prof. Gul Calikli, Uni of Gothenburg/Chalmers, Sweden

Future planned activities and goals

1. **Activities related to ITSS conferences**
   Workshops and technical tracks for Intelligent Vehicle symposium 2020.

2. **Activities related to ITSS Publications**
   Planning for Special issue or section in the Transactions on ITS.

3. **Other technical activities**
   TC member meeting at ITSC 2019 and discussion of future activities.