9th International ACM Conference on Automotive User Interfaces and Interactive Vehicular Applications

ACM AutomotiveUI ´17
Oldenburg, Germany
September 24 – 27, 2017

AUI
ACM AutomotiveUI 2017
Oldenburg, Germany

OFFIS
INSTITUTE FOR INFORMATION TECHNOLOGY

CARL VON OSSIETZKY universität OLDENBURG

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Chair's Welcome

We are very pleased to welcome you to the 9th ACM International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI '17). The 2017 conference is hosted by the University of Oldenburg and OFFIS (Institute for Information Technology).

AutomotiveUI is the premier forum for user interface research in the automotive domain, bringing together researchers from both academia and the industry. As in previous years, the papers and presentations of AutomotiveUI '17 target novel vehicle technologies through models and concepts for enhancing the driver experience, performance, and behavior, the development of semi-automated and fully autonomous driving, and the needs of different user groups, including passengers and pedestrians.

Authors were invited to submit 8 page full papers and 4 page notes, as well as work-in-progress papers, interactive demos and industrial showcases, videos, workshops and tutorials, and doctoral colloquium position papers.

We received a total of 85 papers and notes for the main conference track, which is the same record number of submissions we received in 2016. All submissions underwent a rigorous single blind peer-review by international experts in the field. Overall, the acceptance rate was 40% with 34 submissions accepted, including 5 notes. The topics covered include but are not limited to automated vehicles, driver information processing, display and control design of in-vehicle information systems, and vehicle - pedestrian interactions. In addition to the accepted full papers and notes, the conference also presents work in the doctoral colloquium, the workshops and tutorials, work-in-progress posters, interactive demos and industrial showcases, and videos.

Three keynotes are complementing the conference: Dr. Michaela Schäfer, (HELLA KGaA Hueck & Co), Prof. Andrew Kun (University of New Hampshire), and Prof. Gordon Pipa (University of Osnabrück) will be talking about the mobility solutions of tomorrow, automated driving, and ethical perspectives.

Acknowledgments

We would like to thank the members of the organizational and technical committees of all tracks for their outstanding work and team effort, as well as the hard-working members of the program committees, all reviewers, and student volunteers. You all contributed to the organization of an exciting program for AutomotiveUI 2017 in Oldenburg!

Finally, we would like to thank our supporters, sponsors and exhibitors in supporting the conference. Sponsorship and exhibitors bring incomparable visibility to the leading conference on Automotive User Interfaces and we are grateful for an exciting number of renowned international companies to support us. Special thanks also go all the people who helped to bring AutomotiveUI under the umbrella of the ACM SIGCHI sponsored specialized conferences. We extend our gratitude to ACM SIGCHI for taking the risk to support this conference.

In this brochure you find the detailed program of the entire conference and also helpful information about Oldenburg and activities taking place. We are truly proud of the work of the AutomotiveUI research community as evident by the proceedings. Finally, we hope you enjoy all aspects of the program, and that you get a chance during your stay to explore Oldenburg.

Susanne Boll
University of Oldenburg, Germany
General Chair

Bastian Pfleging
LMU Munich, Germany
Technical Program Chair

Birsen Donmez
University of Toronto, Canada
Technical Program Chair

Practicalities

Wi-Fi Access

At OFFIS

1. Name: AutoUI
   Pw: Only2Internet

2. Name: eduroam
   Access with your eduroam account

At Alte-Fleiwa

Please use the printed Wi-Fi vouchers (found in your badge)

Conference Website

https://www.auto-ui.org/17/

Online Proceedings

https://www.auto-ui.org/17/proceedings/

Online Program and Last-Minute Changes

For last minute updates, please visit the conference website at https://www.auto-ui.org/17/program/ or have a look at our Facebook page https://www.facebook.com/autoUI/

Social Media

Tweet your thoughts and comments on social media

- Twitter using #autoui17 and @AutomotiveUI
- Facebook using the #autoui17 hashtag and also our dedicated AutomotiveUI page: https://www.facebook.com/autoUI/

Coffee / Lunch

Every morning before the sessions there are small coffee refreshments offered for those who come in early.

Coffee breaks in the mornings and in the afternoon will be served in the OFFIS lounge area. You will find coffee and tea as well as different kinds of cakes, snacks, and fruits that will vary over the different days of the conference.

Lunch is included into the conference registration. Lunch will be offered from 13:00 to 14:00 in the "Alte Fleiwa" cafeteria during the conference days.

Cloakroom

Your luggage can be stored on the U-Floor (U04) in the OFFIS building. Besides, several hall stands are prepared near the registration desk.

Public Transportation

1. **To Oldenburg central train station:** If you want to go from OFFIS to the central train station, you can go by taxi (can be called by the reception) or by bus. By bus, take the Bus 308 from “Industriestraße” to stop in “ZOB”. (Ticket information: https://en.vbn.de/).

2. **To Bremen airport:** First, you can take either the bus or taxi to the Oldenburg central train station **(Oldenburg (Oldb) Hbf)**. Then take the train from Oldenburg to Bremen central train station **(Bremen Hbf)**. With the bus **STR6** on the **Platform F** in front of the Bremen central train station, you can reach the Bremen Airport, stop at “Flughafen, Bremen”. (You can check train schedules and prebook tickets here: https://www.bahn.com/en/view/index.shtml)

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Video Track

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Hanneke Hooft van Huysduynen, Technische Universiteit Eindhoven, The Netherlands

Workshops and Tutorials

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Sebastian Feuerstack, OFFIS - Institute for Information Technology, Germany
Nicola Frick, University of Ulm, Germany
Christiane Glatz, Max Planck Institute for Biological Cybernetics, Germany
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Andreas Riener, Technische Hochschule Ingolstadt, Germany

Panelists

Gary Burnett, University of Nottingham, UK
Paul Green, University of Michigan, USA
Martin Baumann, Ulm University, Germany
Myounghoon “Philart” Jeon, Michigan Tech, USA
Joseph L. Gabbard, Virginia Tech, USA

Registration is always at OFFIS,
and coffee is always served there from Monday to Wednesday
Lunch is always between 13:00 - 14:00 at the "Alte Fleiwa" Location

	Sunday, 24.09.	Monday, 25.09.	Tuesday, 26.09.	Wednesday, 27.09.
08:30	Registration	Registration	Registration	Registration
09:00	Morning Workshops	Welcome Session	Session 3: Gestures	Session 7: AV-Driver Interaction
09:30		Opening Keynote: Michaela Schäfer		
10:00				
10:30	Coffee	Coffee	Coffee	Coffee
11:00	Morning Workshops	Session 1: Comparing Input Modalities	Session 4: Driver Information Processing	Session 8: Peripheral Light Displays
12:00		Session 2a: Pedestrians: Communication and Alerts	12:20h Pre-lunch Keynote Andrew Kun	12:20h Video Showcase
13:00	Lunch	Lunch	Lunch Special Lunch Event: Becoming a Volunteer for ACM SIGCHI OFFIS D21 (Aaron Quigley)	Lunch

14:00	Afternoon Workshops	Session 2b: Pedestrians: Communication and Alerts	Session 5: Fresh Approaches	Closing Keynote: Gordon Pipa
14:30				
15:00		Posters and Demos 1		Closing Remarks
15:30	Coffee		Posters and Demos 2	
16:00	Afternoon Workshops			
16:30				
17:00		From 16:30 on the buses can be boarded. **Please note we will depart at 16.50h** Social Event Mercedes-Benz Factory Tour	Session 6: Automated Driving: Output and Take-Over	
17:30				
18:00				
18:30				
19:00				
19:30			19:30h Conference Banquet LUX Barkultur und Grillkunst	
20:00				

OFFIS	Alte Fleiwa

Keynote Speakers

Opening Keynote

Monday, September 25
09:30-10:30, **Location: Audimax, Alte Fleiwa**

Dr. Michaela Schäfer

Head of CEO Office and Projects, HELLA KGaA Hueck & Co.

Software – innovation driver of the mobility solutions of tomorrow

Digitalization has a dynamic impact on markets and societies worldwide. Car functionalities, the automotive value chain as well as the E/E architecture will change significantly in light of the automotive mega-trends of autonomous driving, connectivity & digitalization, efficiency & electrification, and individualization. OEMs and automotive suppliers alike need to position themselves in this dynamic market environment to be prepared for the future.

Bio

Dr. Michaela Schäfer leads the CEO Office at HELLA and is in this role in particular responsible for the Corporate Strategy Process of HELLA. Until 2015 Dr. Schäfer led the global purchasing function of HELLA and has been a member of the Executive Board of the Business Division Lighting. Before joining HELLA in 2006 she has worked 9 years in Top Management consulting with focus on the automotive industry.

Pre-Lunch Keynote

Tuesday, September 26
12:20-13:00, **Location: Audimax, Alte Fleiwa**

Prof. Andrew L. Kun, Ph.D.

Associate Professor of Electrical and Computer Engineering at the University of New Hampshire, and director of the UNH Human-Computer Interaction Lab

In-vehicle interfaces: From manual driving to automation

Today's vehicles have myriad user interfaces, from those related to the moment-to-moment control of the vehicle, to those that allow the consumption of information and entertainment. The bulk of the work in this domain in the recent past and the present is related to manual driving. In exploring user interfaces for manual driving a key issue has been assessing the effects of the interfaces on driving safety. Very frequently this is done in the context of an application, such as navigation, entertainment, or communication. With the recent advances in automated vehicles, there is an increased attention on user interactions as they relate to creating a place for work and play during a trip. Given that it is unlikely that most vehicles will be fully automated in the near future, there are also significant efforts to understand how to help the driver switch between different modes of automation. This talk will provide a brief review of these areas of research, and it will provide recommendations for future work.

Bio

Andrew L. Kun is Associate Professor of Electrical and Computer Engineering at the University of New Hampshire, and director of the UNH Human-Computer Interaction Lab. His primary research interest is in-vehicle human-computer interaction. He serves on the Steering Committee of the ACM AutomotiveUI conference series, and was General Chair of the conference in 2012. He is a member of the IEEE and ACM.

Keynote Speakers

Closing Keynote

Wednesday, September 27
14:00-15:00, **Location: Audimax, Alte Fleiwa**

Prof. Dr. Gordon Pipa

Institute of Cognitive Science, Neuroinformatics, Osnabrück University, Germany

A cognitive computing approach to self-driving cars and ethics

Self-driving cars are posing a new challenge to our ethics. By using algorithms to make decisions in situations where harming humans is possible, probable or even unavoidable, a self-driving car's ethical behavior comes pre-defined. Ad hoc decisions are made in milliseconds, but can be based on extensive research and debates. The same algorithms are also likely to be used in millions of cars at a time, increasing the impact of any inherent biases, and increasing the importance of getting it right. I will present a cognitive computing system, that is a combination of immersive virtual reality, to assess ethical behavior in simulated road traffic scenarios, and use the collected data to train and evaluate a range of decision models and machine learning tools to model this behavior to allow machines to behave as humans do.

In this talk, I will present the experimental results and guide the audience to discuss the ethical consequences. The talk will end with key questions that we need to address as a society today in order to be ready for a new time, in which our living space is shared between autonomous system and us. Keep in mind that autonomous cars seem to be just the beginning.

Bio

Prof. Pipa is currently chair of the Neuroinformatics Lab at the Institute of Cognitive Science at Osnabrück University, Germany. He started this position after research positions at the Max Planck Institute for Brain Research in Frankfurt, and the

Department of Brain and Cognitive Sciences at MIT. He studied physics with a focus on complex systems and statistical physics, holds a Ph.D. degree in computer science and Habilitation in biology. Additionally, he holds several patents in the domain of neuro-inspired image processing. Currently, his research is focused on cognitive computing systems, that fuse artificial intelligence, machine learning and natural language based interactions with humans.

Sunday, September 24

Morning, 09:00-13:00
Workshops, Tutorials & DC

W1: Understanding Automation: Interfaces that facilitate user understanding of vehicle automation
Location: OFFIS D21
Organizers: Lewis Chuang (MPI for Biological Cybernetics), Dietrich Manstetten (Robert Bosch), Susanne Boll (OFFIS), and Martin Baumann (Ulm University)

W3: Navigating Autonomous Cars: The Opportunities of HD Maps on User Experience
Location: Alte Fleiwa Colloquium 3
Organizers: Sven Krome, Juan Jativa-Villoldo, Dorothea Brockmann (HERE Technologies), Fabius Steinberger, Ronald Schroeter (Queensland University of Technology), Alexander Meschtscherjakov, and Sandra Trösterer (University of Salzburg)

W5: First Workshop on Trust in the Age of Automated Driving
Location: Alte Fleiwa Colloquium 1
Organizers: Brittany Noah (Georgia Institute of Technology), Philipp Wintersberger (Technische Hochschule Ingolstadt), Alexander Mirnig (University of Salzburg), Shailie Thakkar (Lyft), Fei Yan (OFFIS), Thomas Gable (Georgia Institute of Technology), Johannes Kraus (Ulm University) and Rod McCall (Luxembourg Institute of Science and Technology)

W6: Workshop on User-Centered Design for Automated Driving Systems
Location: Alte Fleiwa Colloquium 2
Organizers: Anna-Katharina Frison, Andreas Riener (Technische Hochschule Ingolstadt), Bastian Pfleging (LMU Munich), Myounghoon Jeon (Michigan Technological University), Bastian Pfleging (LMU Munich), Ignacio Alvarez (Intel), and Wendy Ju (Stanford University)

T1: Tutorial How does your HMI Design affect the visual attention of the driver?
Location: OFFIS U104
Organizers: Sebastian Feuerstack (OFFIS) and Bertram Wortelen (University of Oldenburg)

Doctoral Colloquium (morning session)
Location: OFFIS O100
Organizers: Andreas Riener (Technische Hochschule Ingolstadt) and Wendy Ju (Stanford University)

W2: Human Machine Interaction in Autonomous Vehicles: the perspective of the two current HORIZON 2020 projects ADAS&ME and AUTOMATE
Location: Alte Fleiwa Colloquium 1
Organizers: Fabio Tango (CRF), Roberto Montanari (RE:Lab srl), Andreas Luedtke (OFFIS), and Frederik Diederichs (Fraunhofer IAO)

13:00-14:00 Lunch

Afternoon, 14:00-18:00

W4: Control Transition Workshop: Handover and Takeover Procedures in Highly Automated Driving
Location: Alte Fleiwa Colloquium 2
Organizers: Shadan Sadeghian Borojeni (OFFIS), Alexander Meschtscherjakov, Alexander Mirnig (University of Salzburg), Susanne Boll (University of Oldenburg), Frederik Naujoks (Wuerzburg Institute for Traffic Sciences), Ioannis Politis (University of Cambridge), and Ignacio Alvarez (Intel)

W7: ARV 2017: Workshop on Augmented Reality for Intelligent Vehicles
Location: OFFIS F02, Rooms U61 and U82 as breakout rooms
Organizers: Andrew Kun (University of New Hampshire), Manfred Tscheligi (University of Salzburg), Andreas Riener (Technische Hochschule Ingolstadt), and Hidde van der Meulen (University of New Hampshire)

T2: Driver Evaluation in a Compact Motion-Based Driving Simulator
Location: OFFIS D21
Organizers: Kristina Stojmenova (University of Ljubljana), Boštjan Kaluža (NERVteh), Jaka Sodnik (University of Ljubljana)

Doctoral Colloquium (afternoon session)
Location: OFFIS O100
Organizers: Andreas Riener (Technische Hochschule Ingolstadt) and Wendy Ju (Stanford University)

Monday, September 25

09:30-10:30 Opening Keynote: Dr. Michaela Schäfer

Talk: *Software – innovation driver of the mobility solutions of tomorrow*
Location: Alte Fleiwa

10:30-11:00 Coffee

Papers and Notes

11:00-12:20 Paper Session 1 - Comparing Input Modalities

Session Chair: Lewis Chuang
Location: OFFIS F02

Visual Distraction Effects of In-Car Text Entry Methods – Comparing Keyboard, Handwriting and Voice Recognition
Tuomo Kujala, Hilkka Grahn (University of Jyväskylä)

An Evaluation of Touch and Pressure-Based Scrolling and Haptic Feedback for In-car Touchscreens
Alexander Ng, Stephen Brewster (University of Glasgow)

In-Vehicle Touchscreen Interaction: Can a Head-Down Display Give a Heads-Up on Obstacles on the Road?
Katia Buchhop, Laura Edel, Sabrin Kenaan, Ulrike Raab, Patricia Böhm, Daniel Isemann (University of Regensburg)

Putting the Joy in Driving: Investigating the Use of a Joystick as an Alternative to Traditional Controls within Future Autonomous Vehicles
David Large, Victoria Banks, Gary Burnett, Neofytos Margaritis (University of Nottingham)

12:20-13:00
Paper Session 2a - Pedestrians: Communication and Alerts

Session Chair: Jeff Greenberg
Location: OFFIS F02

Did You See Me? Assessing Perceptual vs. Real Driving Gains Across Multi-Modal Pedestrian Alert Systems
Coleman Merenda, Hyungil Kim, Joseph L. Gabbard (Virginia Tech), Samantha Leong (Virginia Polytechnic Institute and State University), David Large, Gary Burnett (University of Nottingham)

Gap Acceptance and Time-To-Arrival Estimates as Basis for Informal Communication between Pedestrians and Vehicles
Matthias Beggiato, Claudia Witzlack, Josef Krems (Chemnitz University of Technology)

13:00-14:00 Lunch

14:00-14:40
Paper Session 2b - Pedestrians: Communication and Alerts
Session Chair: Jeff Greenberg
Location: OFFIS F02

First Step into Visceral Interaction with Autonomous Vehicles
Raphael Zimmermann, Reto Wettach (University of Applied Sciences Potsdam)

Eyes on a Car: an Interface Design for Communication between an Autonomous Car and a Pedestrian
Chia-Ming Chang, Koki Toda (The University of Tokyo), Daisuke Sakamoto (Hokkaido University), Takeo Igarashi (The University of Tokyo)

14:40-16:10 Posters and Demos I + Coffee
Location: OFFIS Lounge
Chairs: Andreas Löcken and Ronald Schroeter

Works-In-Progress
Situation Awareness and Motion Sickness in Automated Vehicle Driving Experience: A Preliminary Study of Peripheral Visual Information
Juffrizal Bin Karjanto, Nidzamuddin Md. Yusof, Alberto Martini, Chao Wang, Jacques Terken, Frank Delbressine, Matthias Rauterberg (Eindhoven University of Technology).

A Head-Mounted Display to Support Teleoperations of Shared Automated Vehicles
Martijn Bout (KTH Royal Institute of Technology), Anna Pernestål Brenden (KTH Royal Institute of Technology), Maria Klingegård (RISE Viktoria), Azra Habibovic (RISE Viktoria), Marc-Philipp Böckle (KTH Royal Institute of Technology).

Developing a Highly Automated Driving Scenario to Investigate User Intervention "When Things Go Wrong"
Sarah Faltaous (Max Planck Institute), Tonja Machulla (University of Stuttgart), Martin Baumann (University of Ulm), Lewis Chuang (Max Planck Institute for Biological Cybernetics).

MotionReader: Visual Acceleration Cues for Alleviating Passenger E-Reader Motion Sickness
Evan Hanau, Voicu Popescu (Purdue University).

A Concept For A Virtual Reality Driving Simulation In Combination With A Real Car
Hieu Lê, Tuan Long Pham, Gerrit Meixner (Heilbronn University).

Examining the Impact of See-Through Cockpits on Driving Performance in a Mixed Reality Prototype
Patrick Lindemann, Gerhard Rigoll (Technical University of Munich).

Towards Designing Affect-Aware Systems for Mitigating the Effects of In-Vehicle Frustration
Andreas Löcken (University of Oldenburg), Klas Ihme (German Aerospace Center), Anirudh Unni (University of Oldenburg).

Human-to-AI Interfaces for Enabling Future Onboard Experiences
Pietro Lungaro, Konrad Tollmar, Thomas Beelen (KTH Royal Institute of Technology).

Challenges of Creating Driver Overriding Mechanisms
Steffen Maurer (Robert Bosch GmbH), Rainer Erbach (Robert Bosch GmbH), Enrico Rukzio (Ulm University).

Experimental Setup of Motion Sickness and Situation Awareness in Automated Vehicle Riding Experience
Nidzamuddin Md. Yusof, Juffrizal Bin Karjanto, Shivam Kapoor, Jacques Terken, Frank Delbressine, Matthias Rauterberg (Eindhoven University of Technology).

Anthropomorphic AI Agent Mediated Multimodal Interactions in Vehicles
Satoshi Okamoto (Toyota Innovation Hub), Shin Sano (ICI).

Control Transferring between Automated and Manual Driving using Shared Control
Takahiro Saitoh, Takahiro Wada, Kohei Sonoda (Ritsumeikan University).

SMALLCAR - A Scaled Model for Ambient Light Display Creation and Review of In-Vehicle Light Patterns
Jannik Spieker (University of Oldenburg), Andreas Löcken (University of Oldenburg), Wilko Heuten (OFFIS), Susanne Boll (University of Oldenburg).

CarSketch: A Collaborative Sketching Table with Self-Propelled Tangible Objects for Automotive Applications
Ludwig Trotter, Christian Mai, Florian Alt (LMU Munich).

Driver State Estimation Based on Dynamic Bayesian Networks Considering Different Age and Gender Groups
Ji Hyun Yang, Jihyuck Han, Hyeon-Bin Jeong, Sejoon Lim (Kookmin University).

Interactive Demos & Industrial Showcases

Interactive Demo Chairs: Martin Baumann and Ignacio Alvarez
Industrial Showcases Chairs: Nora Broy and Sebastian Osswald
Location: OFFIS Lounge

Multi-level Force Touch Discrimination on Central Information Display in Car
Jochen Huber, Mohamed Selk-Nainar, Nada Matic (Synaptics Inc.)

Designing for Enhancing Situational Awareness of Semi-Autonomous Driving Vehicles
Chao Wang, Sander Steeghs, Debayan Chakraborty, Archita Gorle, Debargha Dey, Sietze van de Start, Adityen Sudharkaran, Jacques Terken, and Jun Hu (Eindhoven University of Technology)

ASAM: an Emotion Sampling Method for the Automotive Industry
Michael Braun (BMW Group) and Karina Serres (LMU Munich)

Haptic In-vehicle Gesture Controls
Orestis Georgiou, Valerio Biscione, Adam Hardwood, Daniel Griffiths, Marcello Giordano, and Tom Carter (Ultrahaptics Ltd.)

Rapid, Live Data Supported Prototyping with U.S.E.
Clemens Schartmueller, Philipp Wintersberger, and Andreas Riener (Technische Hochschule Ingolstadt)

NERVTeh compact motion-based driving simulator
Kristina Stojmenova and Jaka Sodnik (NERVTEH)

Dragon Drive Innovation Showcase
Alexander Davydov (Nuance)

Evaluation of Driver Information Systems According to NHTSA Guidelines
Rohit Kumar Sasidharan and Christian Lange (Ergoneers)

Adaptive Autonomous Driving Policies with GENIVI Vehicle Simulator
Victor Palacios and Ignacio Alvarez (Intel Corporation)

16:50-19:30 Social Event:

Mercedes-Benz Factory Tour, Im Holter Feld, 28309 Bremen
(See Social Program for details)

Papers and Notes

09:00-10:30 Paper Session 3 – Gestures

Session Chair: Alexander Meschtscherjakov
Location: OFFIS F02

Designing an In-Vehicle Air Gesture Set Using Elicitation Methods
Keenan May, Thomas Gable, Bruce Walker (Georgia Institute of Technology)

Novel Multimodal Feedback Techniques for In-Car Mid-Air Gesture Interaction
Gözel Shakeri, John Williamson, Stephen Brewster (University of Glasgow)

The Effects of Situational Demands on Gaze, Speech and Gesture Input in the Vehicle
Florian Roider, Sonja Rümelin (BMW Group), Bastian Pfleging (LMU Munich), Tom Gross (University of Bamberg)

Clicks are in the Air: How to Support the Interaction with Floating Objects through Ultrasonic Feedback
Sonja Rümelin, Thomas Gabler, Jesper Bellenbaum (BMW Group)

Pedestrian Interaction with Vehicles: Roles of Explicit and Implicit Communication
Debargha Dey, Jacques Terken (Eindhoven University of Technology)

10:30-11:00 Coffee

11:00-12:20 Paper Session 4 - Driver Information Processing

Session Chair: Chris Janssen
Location: Alte Fleiwa

Differentiating Cognitive Load Using a Modified Version of AttenD
Bobbie Seppelt (Massachusetts Institute of Technology), Sean Seaman, Linda Angell (Touchstone Evaluations), Bruce Mehler, Bryan Reimer (Massachusetts Institute of Technology)

Using EEG to Understand why Behavior to Auditory In-vehicle Notifications Differs Across Test Environments
Lewis Chuang, Christiane Glatz (Max Planck Institute for Biological Cybernetics), Stas Krupenia (Scania)

Learning-by-Doing: Using Near Infrared Spectroscopy to Detect Habituation and Adaptation in Automated Driving
Stephanie Balters (Norwegian University of Science and Technology), Srinath Sibi, Mishel Johns (Stanford University), Martin Steinert (Norwegian University of Science and Technology), Wendy Ju (Stanford University)

Visual Attention During Simulated Autonomous Driving in the US and Japan
Yumiko Shinohara (Kyoto Institute of Technology), Rebecca Currano, Wendy Ju (Stanford University), Yukiko Nishizaki (Kyoto Institute of Technology)

12:20-13:00 Pre-Lunch Keynote: Prof. Dr. Andrew Kun

Talk: *In-vehicle interfaces: From manual driving to automation*
Location: Alte Fleiwa

13:00-14:00 Lunch
or Special Lunch Event (catering provided):
Becoming a Volunteer for ACM SIGCHI (Aaron Quigley)

Location: OFFIS D21

14:00-15:30 Paper Session 5 - Fresh Approaches

Session Chair: Sonja Rümelin
Location: OFFIS F02

What Did I Sniff? Mapping Scents Onto Driving-Related Messages
Dmitrijs Dmitrenko, Emanuela Maggioni, Chi Thanh Vi, Marianna Obrist (University of Sussex)

Altering Speed Perception through the Subliminal Adaptation of Music within a Vehicle
Gary Burnett, Elizabeth Crundall, Adrian Hazzard (University of Nottingham), David Crundall (Nottingham Trent University)

What We Can Learn from Pilots for Handovers and (De)Skilling in Semi-Autonomous Driving: An Interview Study
Sandra Trösterer, Alexander Meschtscherjakov, Alexander Mirnig, Artur Lupp, Magdalena Gärtner (University of Salzburg), Fintan McGee, Rod McCall (Luxembourg Institute of Science and Technology), Manfred Tscheligi (University of Salzburg), Thomas Engel (University of Luxembourg)

Collaborative Experience Prototyping of Automotive Interior in VR with 3D Sketching and Haptic Helpers
Sang-Gyun An, Yongkwan Kim, Joon Hyub Lee, Seok-Hyung Bae (KAIST)

15:30-17:00 Posters and Demos II + Coffee

Works-In-Progress

Chairs: Andreas Löcken and Ronald Schroeter
Location: OFFIS-Lounge

SAV2P – Exploring the Impact of an Interface for Shared Automated Vehicles on Pedestrians' Experience
Marc-Philipp Böckle (KTH Royal Institute of Technology), Anna Pernestål Brenden (KTH Royal Institute of Technology), Maria Klingegård (RISE Viktoria), Azra Habibovic (RISE Viktoria), Martijn Bout (KTH Royal Institute of Technology).

Which Factors Influence Attitudes Towards Using Autonomous Vehicles?
Patricia Böhm, Martin Kocur, Murat Firat, Daniel Isemann (University of Regensburg).

A Design Space for External Displays on Cars
Ashley Colley (University of Lapland), Jonna Hakkila (University of Lapland), Bastian Pfleging (LMU Munich), Florian Alt (LMU Munich).

Design Possibilities for Vehicle Roll Motions as Feedback for the Driver during Automated Driving
Stephanie Cramer (Technical University of Munich), Alexander Tobias Lange (AUDI AG), Stephan Bültjes (GIGATRONIK Ingolstadt), Jana Maria Klohr (Technische Universität Darmstadt).

The Impact of Vehicle Appearance and Vehicle Behavior On Pedestrian Interaction with Autonomous Vehicles
Debargha Dey (Eindhoven University of Technology), Marieke Martens (TNO), Berry Eggen, Jacques Terken (Eindhoven University of Technology).

Automated Driving: Acceptance and Chances for Elderly People
Katharina Diepold, Kerstin Götzl, Andreas Riener, Anna-Katharina Frison Technische Hochschule Ingolstadt).

Force-enabled Touch Input on the Steering Wheel: An Elicitation Study
Jochen Huber, Mohamed Sheik-Nainar, Nada Matic (Synaptics Inc.).

Stretchertainment: Inducing Passive Stretching with HUD Infotainment in Automotive
Suyoung Jang (Sungkyunkwan University), Hyochan Kim (Sungkyunkwan University), Jundong Cho (H-Lab.).

Blueprint of the Auditory Interactions in Automated Vehicles: Report on the Workshop and Tutorial
Myounghoon Jeon (Michigan Technological University), Seyedeh Maryam Fakhr Hosseini (Michigan Technological University), Eric Vasey (Michigan Technological University), Michael Nees (Lafayette College).

Enhancing Driving Safety and User Experience Through Unobtrusive and Function-Specific Feedback
Alexander Kunze, Stephen J. Summerskill, Russell Marshall, Ashleigh J. Filtness (Loughborough University).

Driving Acceptance: Applying Structural Equation Modeling to In-Vehicle Automation Acceptance
Keenan R May, Brittany E Noah, Bruce N Walker (Georgia Institute of Technology).

Eyes-free In-vehicle Air Gesture Controls: Auditory-only Displays Reduced Visual Distraction and Workload
Jason Sterkenburg, Steven Landry, Myounghoon Jeon (Michigan Technological University).

Transport Companies, Truck Drivers, and the Notion of Semi-Autonomous Trucks: A Contextual Examination
Sandra Trösterer, Thomas Meneweger, Alexander Meschtscherjakov, Manfred Tscheligi (University of Salzburg).

Touch Screen Maneuver Approval Mechanisms for Highly Automated Vehicles: A First Evaluation
Marcel Walch, Lorenz Jaksche, Philipp Hock, Martin Baumann, Michael Weber (Ulm University).

Establishing Design Parameters for Large Stereoscopic 3D Dashboards
Florian Weidner, Wolfgang Broll (Ilmenau University of Technology).

Using Eye-Tracking to Help Design HUD-Based Safety Indicators for Lane Changes
Fang You, Yang Li (Tongji University), Ronald Schroeter (Queensland University of Technology), Jürgen Friedrich (University of Bremen), Jianmin Wang (Tongji University).

Interactive Demos & Industrial Showcases

Interactive Demo Chairs: Martin Baumann and Ignacio Alvarez
Industrial Showcases chairs: Nora Broy and Sebastian Osswald
Location: OFFIS Lounge

Multi-level Force Touch Discrimination on Central Information Display in Car
Jochen Huber, Mohamed Selk-Nainar, Nada Matic (Synaptics Inc.)

Designing for Enhancing Situational Awareness of Semi-Autonomous Driving Vehicles
Chao Wang, Sander Steeghs, Debayan Chakraborty, Archita Gorle, Debargha Dey, Sietze van de Start, Adityen Sudharkaran, Jacques Terken, and Jun Hu (Eindhoven University of Technology)

ASAM: an Emotion Sampling Method for the Automotive Industry
Michael Braun (BMW Group) and Karina Serres (LMU Munich)

Haptic In-vehicle Gesture Controls
Orestis Georgiou, Valerio Biscione, Adam Hardwood, Daniel Griffiths, Marcello Giordano, and Tom Carter (Ultrahaptics Ltd.)

Rapid, Live Data Supported Prototyping with U.S.E.
Clemens Schartmueller, Philipp Wintersberger, and Andreas Riener (Technische Hochschule Ingolstadt)

NERVTeh compact motion-based driving simulator
Kristina Stojmenova and Jaka Sodnik (NERVTEH)

Dragon Drive Innovation Showcase Alexander Davydov (Nuance)
Evaluation of Driver Information Systems According to NHTSA Guidelines Rohit Kumar Sasidharan and Christian Lange (Ergoneers)

Adaptive Autonomous Driving Policies with GENIVI Vehicle Simulator
Victor Palacios and Ignacio Alvarez (Intel Corporation)

Tuesday, September 26

17:00-18:30
Paper Session 6 - Automated Driving: Output and Take-Over
Session Chair: Myounghoon “Philart” Jeon
Location: OFFIS F02

Benefits of Personalization in the Context of a Speech-Based Left-Turn Assistant
Dennis Orth, Nadja Schömig, Christian Mark, Monika Jagiellowicz-Kaufmann (Wuerzburg Institute for Traffic Sciences (WIVW)), Dorothea Kolossa (Ruhr-Universität Bochum), Martin Heckmann (Honda Research Institute Europe)

Development and Preliminary Evaluation of Reliability Displays for Automated Lane Keeping
Brittany Noah, Thomas Gable, Shao-Yu Chen, Shruti Singh, Bruce Walker (Georgia Institute of Technology)

Control Transition Interfaces in Semiautonomous Vehicles: A Categorization Framework and Literature Analysis
Alexander G. Mirnig, Magdalena Gärtner, Arno Laminger, Alexander Meschtscherjakov, Sandra Trösterer (University of Salzburg), Rod McCall, Fintan McGee (Luxembourg Institute of Science and Technology), Manfred Tscheligi (University of Salzburg)

Comparing Shape-Changing and Vibro-Tactile Steering Wheels for Take-Over Requests in Highly Automated Driving
Shadan Sadeghian Borojeni, Torben Wallbaum, Wilko Heuten (OFFIS), Susanne Boll (University of Oldenburg)

19:30 Social Event:
Conference banquet
LUX Barkultur und Grillkunst, Poststraße 1, 26122 Oldenburg
(See Social Program for details)

Papers and Notes

09:00-10:30
Paper Session 7 - AV-Driver Interaction Paradigms: What is the Role of the Human?

Session Chair: Bruce Walker
Location: OFFIS F02

What's in a Name: Vehicle Technology Branding & Consumer Expectations for Automation
Hillary Abraham, Bobbie Seppelt (Touchstone Evaluations, Inc.), Bruce Mehler, Bryan Reimer (Massachusetts Institute of Technology)

Driving Hotzenplotz: A Hybrid Interface for Vehicle Control Aiming to Maximize Pleasure in Highway Driving
Anna-Katharina Frison, Philipp Wintersberger, Andreas Riener, Clemens Schartmüller (Technische Hochschule Ingolstadt)

Beyond Liability: Legal Issues of Human-Machine Interaction for Automated Vehicles
Michael Inners, Andrew Kun (University of New Hampshire)

The Importance of Interruption Management for Usefulness and Acceptance of Automated Driving
Frederik Naujoks, Katharina Wiedemann, Nadja Schömig (Wuerzburg Institute for Traffic Sciences)

Investigating Remote Driving over the LTE Network
Ruilin Liu (Rutgers University), Daehan Kwak (Kean University), Srinivas Devarakonda, Kostas Bekris, Liviu Iftode (Rutgers University)

10:30-11:00 Coffee

11:00-12:20 Paper Session 8 - Peripheral Light Displays

Session Chair: Andreas Löcken
Location: OFFIS F02

Individual LED Visualization Calibration to Increase Spatial Accuracy: Findings from a Static Driving Simulator Setup
Sandra Trösterer, Christine Döttlinger, Magdalena Gärtner, Alexander Meschtscherjakov, Manfred Tscheligi (University of Salzburg)

Wednesday, September 27

Guiding Driver Visual Attention with LEDs
Gerald Schmidt, Lena Rittger (Opel Automobile GmbH)

Situation Awareness in Automated Vehicles through Proximal Peripheral Light Signals
Tom van Veen, Juffrizal Karjanto, Jacques Terken (Eindhoven University of Technology)

Ambient Light and its Influence on Driving Experience
Hanneke Hooft van Huysduynen, Jacques Terken (Eindhoven University of Technology), Alexander Meschtscherjakov (University of Salzburg), Berry Eggen (Eindhoven University of Technology), Manfred Tscheligi (University of Salzburg)

12:20-13:00 Video Showcase

Chairs: Myounghoon "Philart" Jeon and Hanneke Hooft van Huysduynen
Location: OFFIS F02

Design Process of Sonically-enhanced Air Gesture Controls in Vehicles
Maryam FakhrHosseini, Jason Sterkenburg, Steven Landry, Joseph Ryan, Myounghoon Jeon (Michigan Technological University)

Multimodal Heads Up Displays to Augment Autonomous Vehicle Supervision
Keenan May, Brittany Noah, Bruce Walker (Georgia Institute of Technology)

Driving Hotzenplotz! A Vehicle Interface that Fosters the Joy of Driving
Anna-Katharina Frison, Philipp Wintersberger, Andreas Riener, Clemens Schartmüller (Technische Hochschule Ingolstadt)

HUD-AR: Enhancing Communication between Drivers by Affordable Technology
Chao Wang, Zhixiong Lu, Jacques Terken, Jun Hu (Eindhoven University of Technology)
I Am The Passenger: Challenges in Supporting AR/VR HMDs In-Motion
Mark McGill, Stephen Brewster (University of Glasgow)

13:00-14:00 Lunch

14:00-15:00 Closing Keynote: Prof. Dr. Gordon Pipa

Talk: *A cognitive computing approach to self-driving cars and ethics*
Location: Alte Fleiwa

Closing Remarks (15:00 – 15:30)

Social Program - Mercedes Benz

September 25 - Starts at 16:50 sharp

Social Event with Welcome Reception:
Mercedes-Benz Factory Tour in Bremen (Im Holter Feld, 28309 Bremen)

- The Mercedes-Benz Factory is the largest production site in Germany in terms of vehicle output. There you will experience the production process, from the presswork to the vehicle body building, and the varnish as well as the final assembly.
  - There will be shuttle buses leaving at 16:50 in front of OFFIS that bring you directly to the Mercedes-Benz Factory. The ride takes about one hour.
  - Refreshments (snack with drinks) will be offered at the customer center.
  - We will have two groups for the guided tour, each group with a maximum of 100 participants (enforced limit):
    - Group 1: 18:30-19:30
    - Group 2: 19:45-21:00
- **Do not forget to bring your badges (which are your tickets)!**

Social Program - Conference Banquet

September 26 - Reception from 19:30 and Dinner at 20:00

- **Conference Banquet:**
  LUX Barkultur und Grillkunst (Poststraße 1, 26122 Oldenburg).
- Built in 1902, the building of the "Lux" was the post office of the state of Oldenburg in the imperial era. It is now a landmark building both on the out- and inside. Join us for a great dinner at a wonderful historic location.
- **Do not forget to bring your badges (which are your tickets)!**

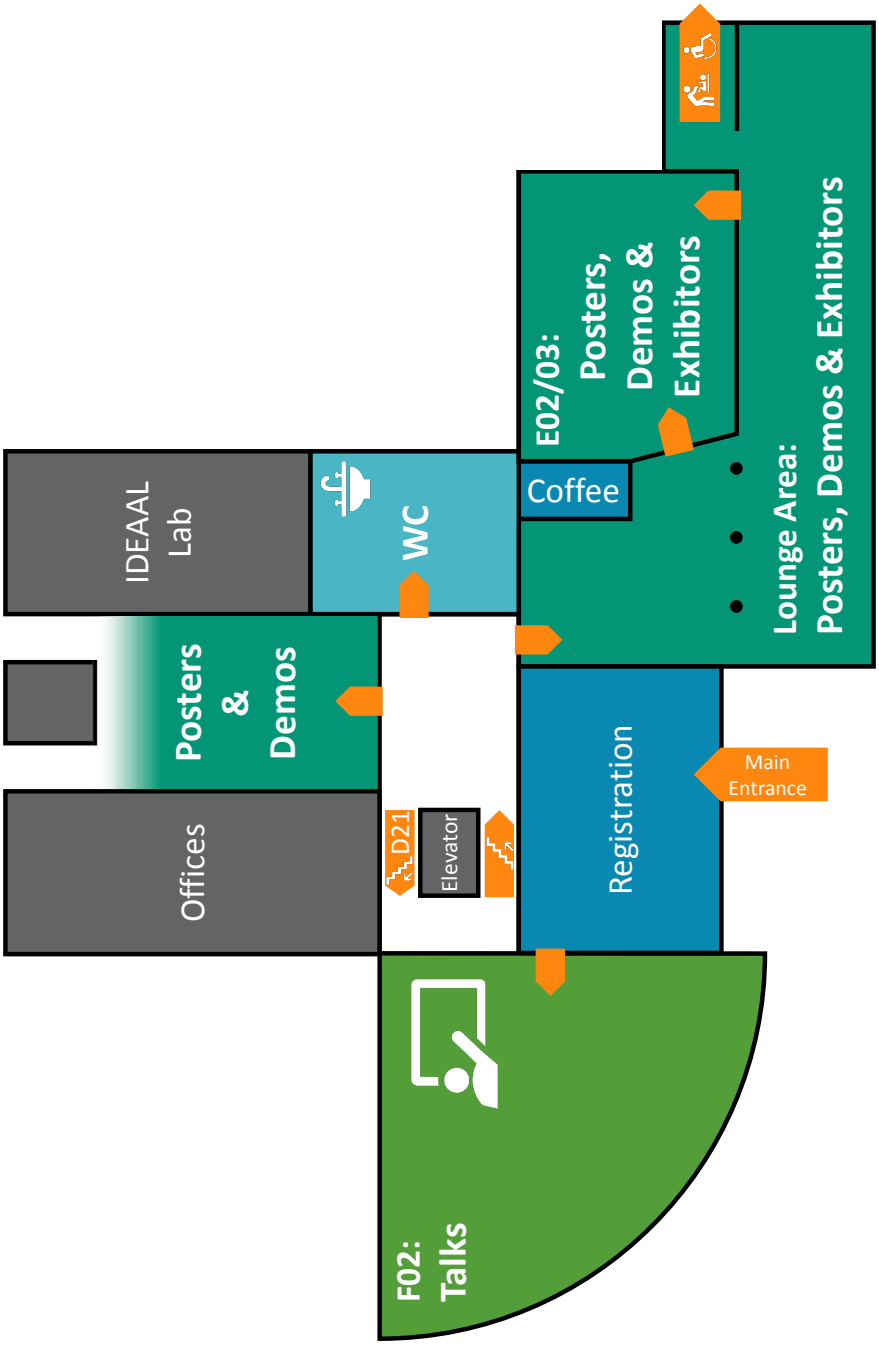
Lost? Need information?

Just ask our student volunteers (SVs) who will be wearing these T-shirts and are happy to help!

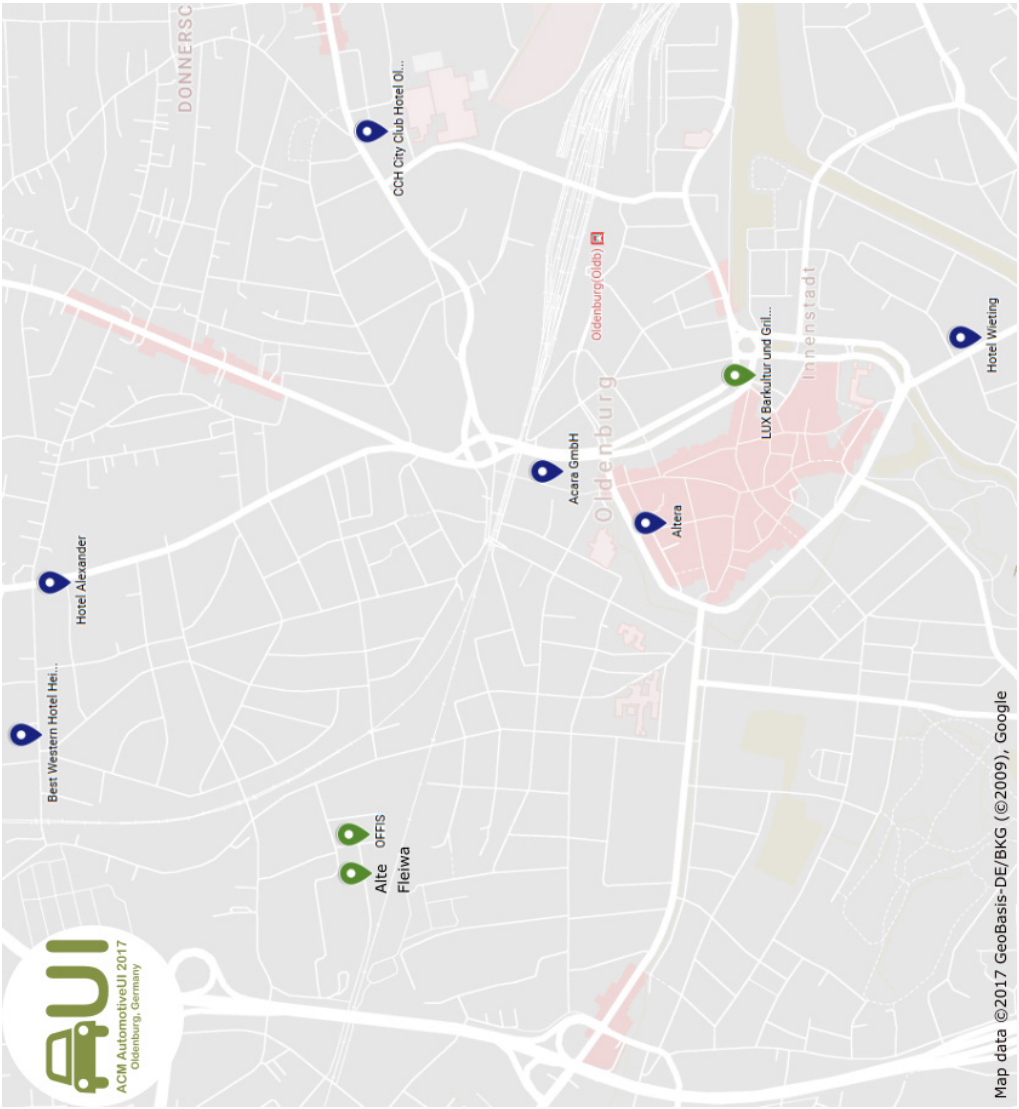
Abdallah El Ali (Local Chair) Shadan Sadeghian Borojeni (SV Chair)

Notes

Floor Plan - OFFIS



City Map - Locations



Bus stop
"Industriestraße"
Line 308 (from/to City Centre
and Central Train Station)
EDEKA
Industriestraße
P
OFFIS
Escherweg
P
Main Entrance OFFIS
Registration (Ground Floor),
Main Auditorium F02 (Ground Floor),
OFFIS Lounge (Ground Floor),
D21 (D-Floor)
Mensa,
Audimax (Ground Floor),
Colloqium I, II, III (2nd Floor)
Main Entrance
"Alte Fleiwa"
P
ACM AutomotiveUI 2017
Oldenburg, Germany
Map data ©2017 GeoBasis-DE/BKG (©2009), Google