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# 2<sup>nd</sup> Workshop on User Experience of Autonomous Driving

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**Abstract**

Autonomous Driving has gained attention from academia and industry over the last decades. Research organizations and companies have developed (semi-) autonomous vehicles and first in-situ studies have been conducted. This workshop follows last year's first AUI workshop on user experience (UX) and autonomous driving (AD). We would like to widen the conversation on UX and AD based on the results from last year. The focus lies in an in-depth discussion on challenges and potentials for UX and AD among experts and researchers. We will explore various areas such as methodological issues, human factors, entertainment, social driving, and novel user interface approaches. The overall aim of the workshop is to discuss the future landscape for research within and across each these areas.

**Author Keywords**

Autonomy, Autonomous Vehicles, Human-Autonomy-Interaction, User Experience Design and Research.

**ACM Classification Keywords**

H.1.2 [User/Machine Systems]: Human Factors, Human Information Processing.

## Motivation

The increasing success of research within the field of autonomous cars means there is now the option to provide advanced services in cars while the vehicle is under fully automated or semi-automated control. It is widely predicted that automated driving will become more widespread in the near future [1]. Numerous research organizations and major companies have developed working autonomous vehicle prototypes [5]. Especially Google's driverless car [6] has gained public attention recently. Also the human-robots-interaction community has investigated autonomous cars as autonomous robots<sup>1</sup>. Based on the first workshop on user experience and autonomous driving from last year's Automotive UI conference [7] and recent developments, the workshop covers issues such as level of automation [4], visualization of uncertainty in autonomous cars [2], automated vehicles in the wild, the transition phase from manually driven cars to autonomous vehicles [3], and driving fun and entertainment in future cars.

The workshop aims at collecting radical, innovative, versatile and engaging works that challenge or re-imagine human interactions in future automated driving scenarios. It seeks to challenge existing thinking by exploring what is possible now and by the time the autonomous vehicle becomes a standard feature of our roads. Participants will be encouraged to suggest alternative concepts whether low fidelity, high fidelity, or both. Especially encouraged will be works that are experiential and can be demonstrated hands on. The workshop is an opportunity to re-shape the conversation of automobile technology by introducing

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<sup>1</sup><http://humanrobotinteraction.org/2014/program/panel-session/>

the community to a new way of thinking. Topic areas of potential interest (not exhaustive) include:

- Driver and passenger interaction with (semi-) autonomous vehicles
- Handover situations between drivers and automated cars
- User experience factors relevant for autonomous driving (e.g., acceptance, trust and driving fun)
- Novel user interface approaches including natural and gaze interaction, subliminal information, and brain computer interfaces
- Driver information displays and how they differ from non-autonomous modes
- Experience studies in the lab and in the field with autonomous vehicles
- Study and evaluation methods for autonomous driving
- Entertainment for drivers and passengers in autonomous cars, as well as gamification approaches
- Ethical issues of autonomous driving

## Outcomes

We aim to help engaged participants to develop their provocative ideas and express them clearly. These ideas provide new angles of understanding the field.

This increase in perspectives, coupled with a confidence that a good idea will eventually form itself into a practical mainstream solution, can encourage creative thinking within the community. Additionally, we aim to create a collection of relevant works and distribute it in appropriate channels such as publications in journals or interest. One venue could be Interactions (ACM), as an example. We also aim to build a network with and for the attendees (and those with similar thinking) to rely on each other and further collaborate on their novel ideas.

### **Organizers**

**Alexander Meschtscherjakov** is Assistant Professor at the University of Salzburg. He directs the car team at the HCI & Usability Unit at the Christian-Doppler-Laboratory "Contextual Interfaces".

**Manfred Tscheligi** is Professor for the HCI & Usability at the University of Salzburg and was Conference Chair for the 3rd Conference AutomotiveUI 2011.

**Dalila Szostak** is a researcher at the Interaction and Experience Research Laboratory, Intel Labs, currently focusing in the area of transportation.

**Rabindra Ratan** is an Assistant Professor at Michigan State University's Department of Telecommunication, Information Studies, and Media.

**Rod McCall** is the leader of the IGNITE (Interaction, Games and Novel Interface Technologies) research collective at SnT, University of Luxembourg.

**Ioannis Politis** is a PhD student in University of Glasgow, Multimodal Interaction Group, working on the design of multimodal displays for drivers.

**Sven Krome** is researcher at RMIT's Games and Experimental Entertainment Lab. In collaboration with Audi Electronic Ventures he is re-thinking the piloted driving experience from an ix- and game designer's perspective.

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