

Where to from here? Algorithmic, Legal, and Societal Challenges for Autonomous Driving

The BROAD workshop – BRoad and Open-minded
discussions of Autonomous Driving

June, 9th, 2019



Chairs:

Tim Tiedemann, HAW Hamburg

Serge Thill, University of Skövde and Radboud University

Sean Anderson, University of Sheffield

Abstract

What are the new frontiers of autonomous driving: Are there open technical or non-technical issues that impede autonomous driving now or in the upcoming future? Can cognitive inspiration and machine learning (ML) help us here or do these approaches lead to new problems?

The workshop is structured in two sessions to focus on two major aspects of these questions. The first session will identify major challenges across all aspects of autonomous driving (algorithmic, societal, etc.) that are supposed to or that could probably impede the development of autonomous driving (AD) or its introduction on the market. These could be technical issues (how many test miles need to be driven? is ML reliable? how to select training data?). But these could also be non-technical questions like law-, insurance-related, or ethical questions.

In the second session, cognitively-inspired and ML-based solutions will be presented. Here, we will focus on two approaches: pure ML, and bio-inspired approaches that try to mimic cognitive mechanisms observed in humans and/or animals in a reasonable amount of detail. Each approach has their own particular advantages and limitations. E.g., pure ML often requires large amounts of training data, yet is typically very brittle while bio-inspired approaches are by necessity based on incomplete theories.

Posters

- *“Qualification Challenges for Machine Learning Algorithms in Autonomous Driving Applications”*, J. Nitsch, Ibeo
- *“Estimating Labeling Quality with Deep Object Detectors”*, C. Haase-Schütz, Bosch/KIT
- *“Autonomous Vehicle Research Platform Mia”*, M. Yüksel, DFKI Robotics Innovation Center
- *“Who is the Tortfeasor When a Self-Driving Car Has an Accident?”*, M. C. Gaeta, Suor Orsola Benincasa University of Naples
- *“Dreams for Cars Project”*, M. Da Lio, University of Trento
- *“Miniature Autonomy as Testing Platform to Tackle Challenges of AD”*, T. Tiedemann, HAW Hamburg

Program

	09:30	Coffee and registration
	09:45-10:00	Welcome talk: “Adversarial Attacks, Missing Acceptance + ???: Challenges for AD?” (Tim Tiedemann, HAW Hamburg, Germany)
	10:00-10:50	Keynote (Dr. Christoph Schroeder, Luminar Tech, previously Mercedes Benz Autonomous Driving, USA)
	10:50-11:00	Coffee break (short)
Challenges for AD Session / AI	11:00-11:30	“Radar AI and the Challenges of AD” (Jonathan Wache, Continental, Germany)
	11:30-12:00	“Qualification Challenges for Machine Learning Algorithms in Autonomous Driving Applications” (Julia Nitsch, Ibeo, Germany)
	12:00-12:30	Discussion
	12:30-13:30	Lunch break and posters
Legal	13:30-14:00	“Estimating Labeling Quality with Deep Object Detectors” (Christian Haase-Schütz, Bosch/KIT, Germany)
	14:00-14:30	“State of the art and legal open issues related to autonomous driving” (Maria Cristina Gaeta, Suor Orsola Benincasa University of Naples, Italy)
	14:30-15:00	“Learning to Co-Drive. Brain Architectures and Mental Imagery Mechanisms that Help Improving Agents for Autonomous Driving and Enable Natural Human-Robot Interactions” (Mauro Da Lio, University of Trento, Italy)
Cognitive Session	15:00-15:30	Coffee break and posters
	15:30-16:00	“Mental Imagery for Intelligent Vehicles” (Alice Plebe, University of Trento, Italy)
	16:00-16:30	“Testing agents and controlling vehicles from simulation to real applications” (Riccardo Dona, University of Trento, Italy)
	16:30-17:00	Final discussion

Venue

Mines ParisTech – PSL Research University

60 Boulevard Saint-Michel,
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Chairs

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Workshop Website

old URL:

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