

Call for Papers
1st International Workshop on
**Safe Control of Connected and
Autonomous Vehicles (SCAV 2017)**

<https://scav.in.tum.de>

hosted by CPS Week 2017

April 18-21, 2017, Pittsburgh, PA, USA

THEME, CHALLENGES, AND GOALS

Autonomous vehicles (AV, e.g. road, submarine, and aerial vehicles, individual or collective, possibly unmanned) as well as traffic penetrated by AVs will provide novel styles of mobility by having to fulfill strong safety requirements.

Control systems for AVs have to

- **act autonomously** when performing safety critical tasks,
- **optimize their control loop parameters** at run-time (e.g. adaptation of SW/HW and behavior in case of internal faults, security attacks, or road infrastructure updates),
- carefully involve **humans in the loop**,
- employ **efficient** run-time verification of **permissive** safety properties,
- be certified in spite of non-deterministic behavior.

As more AVs make up the traffic flow we must explore

- validation and creation of new mathematical models, including models that support integration of moving sensors with fixed and smart infrastructure sensors,
- sensing and control of emergent traffic phenomena,
- platooning and pacing of AVs when in a group,
- security with respect to real-time sensing and actuation among human-driven cars.

This development demands **novel approaches, methods, and models for analysis, design, and assurance of AV controllers and traffic control.**

The **goal** of this workshop is to identify open research problems, discuss recent achievements, bring together researchers in, e.g. software verification, control theory, machine learning, dependability engineering, (self-)adaptive software, machine self-organization and autonomy, mobile intelligent robotics, transportation, traffic control.

TOPICS OF INTEREST

For this workshop, we kindly request contributions on (i) technical research or methodology (max. 8 pages), (ii) case studies (max. 8 pages), and (iii) problem statements or tools (max. 5 pages) in (but not limited to) the following topics:

- **Design and assurance of**
 - self-adaptation, run-time reconfiguration, context-aware adaptation,
 - algorithms for incremental controller synthesis and optimization,
 - optimal adaptive control,
 - parameter adaptation in autonomous control loops,
 - software technology and system architecture,
 - non-deterministic behaviors, and

- off-line and on-line machine-learnable behaviors both at vehicle-level and traffic-level control.

- **Methods and models for**

- design and verification of safety mechanisms,
- validation of controllers,
- identification of and protection against safety-related **security attacks**

both at vehicle-level and traffic-level control.

This interactive, single-day workshop will contain a keynote speech, invited talks, and a panel discussion.

SUBMISSION GUIDELINES

Prospective participants are invited to submit (i) a technical research paper (max. 8 pages), (ii) a case study from practice (max. 8 pages), or (iii) a short paper (max. 5 pages) combined with a poster, references included in the page limits.

All submissions are expected to be original work not published, or in submission, elsewhere, and will be peer-reviewed by at least three members of the program committee and the organizers for quality and relevance. Accepted papers will be included in the CPSWeek Proceedings published with ACM.

IMPORTANT DATES (AOE)

Full paper deadline	28 January 2017
Authors notification	17 February 2017
Camera-ready due	1 March 2017

WORKSHOP ORGANIZERS

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