CALL FOR PAPERS SNR'20
Workshop on Symbolic-Numeric Methods for Reasoning about CPS and IoT

`http://www.cs.cas.cz/snr2020/`

Co-located with **QONFEST'20**

Monday August 31, 2020

TU Wien, Vienna, Austria

Given the COVID-19 situation, SNR'20 will be conducted virtually

Workshop Description

The workshop on Symbolic-Numeric methods for Reasoning about CPS and IoT (SNR) focuses on the combination of symbolic and numeric methods for reasoning about Cyber-Physical Systems and the Internet of Things to facilitate model identification, specification, verification, and control synthesis problems for these systems. The synergy between symbolic and numerical approaches is fruitful for two main reasons:

- Symbolic methods that operate on exact and discrete representations of systems, the set of reachable states, the distribution of model parameters or the possible gains for controller parameters.

- Numeric methods that operate on various forms of numerical approximations and continuous transformations of the systems, as developed in the area of continuous dynamical systems and control theory.

Such synergies are already seen in areas such as reachability analysis (symbolic representation of reachable states versus numerical integration), uncertainty reasoning (eg., Rao-Blackwellization), machine learning (eg., learning models through stochastic gradient descent versus symbolic reasoning over the function represented by the network to prove properties) and decision procedures (eg., symbolic SAT solvers versus numerical convex optimization solvers).

Topics of Interest

The SNR workshop aims to catalyze work on the interface of symbolic and numeric methods for verification, synthesis and identification problems for CPS and IoT. The scope of the workshop includes, but is not restricted to, the following topics:

- Verification, parameter identification and control synthesis for hybrid systems.

- Probabilistic inference and reachability for stochastic hybrid systems.

- Symbolic and numerical integration and decision techniques

- Emerging applications to safe autonomous systems in uncertain environments

- Resiliency and dependability in CPS and IoT

We particularly encourage submissions of papers in the following two specific areas:

- Verification of models used in machine learning and autonomous CPS

- Symbolic and numerical techniques for verification and synthesis of stochastic models

Submission Information

The workshop solicits

- **long research papers** (not exceeding 15 pages excluding references),

- **short research papers** (not exceeding 6 pages excluding references) and

- **work-in-progress papers** (not exceeding 6 pages excluding references).

Research papers must present original unpublished work which is not submitted elsewhere. In order to foster the exchange of ideas, we also encourage work-in-progress papers, which present recent or on-going work. The papers should be written in English and formatted according to the EPTCS guidelines.

Papers can be submitted using the EasyChair system `https://easychair.org/conferences/?conf=snr2020`.

All submissions will undergo a peer-reviewing process. Accepted research papers will be presented at the workshop and published in the Electronic Proceedings in Theoretical Computer Science (EPTCS). Accepted work-in-progress papers will be presented at the workshop but will not be included in the proceedings.

Important Dates

Submission deadline:	15 June 2020	Notification:	15 July 2020
Final version:	30 July 2020	Workshop:	31 August 2020

Organizers

- Thao Dang (CNRS/VERIMAG, France)
- Stefan Ratschan (Academy of Sciences of the Czech Republic)

Program Committee

TBA

Past Versions of the Workshop

This workshop would be the continuation of SNR held with the following conferences in the past:

- CPS-IoT Week 2019 [SNR'19] (organizers Sriram Sankaranarayanan and Sadegh Soudjani)

- ETAPS 2018 [SNR'18] (organizers Taylor T. Johnson and Martin Fränzle)

- ETAPS 2017 [SNR'17] (organizers Erika Abraham and Sergiy Bogomolov)

- CPSWeek 2016 [SNR'16] (organizers Erika Abraham and Sergiy Bogomolov)

- CAV 2015 [SNR'15] (organizers Sergiy Bogomolov and Ashish Tiwari)