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## Distinguished Lecturer Series

Supported by Jeffrey & Holly Ullman



### Prof. Stefan Schmid

Associate Professor, Aalborg University, Denmark

## Algorithmic and Security Challenges in Programmable and Virtualized Networks

**Abstract:** In this talk, I will first give an overview of our recent research on fundamental algorithmic problems arising in the context of consistent updates of Software-Defined Networks (SDNs). In particular, I will present the state-of-the-art algorithms and hardness results on updating flows in a network in a manner which respects loop-freedom, waypointing, and link capacity constraints. The field is currently very active, but many fundamental research questions are still open. See also our recent survey on the topic: [Survey of Consistent Network Updates](#)

I will mainly focus on our HotNets 2014, PODC 2015, DSN 2016 and SIGMETRICS 2016 papers.

In the second part of the talk, we will also explore aspects of fault-tolerance and security in programmable and virtualized networks. In particular, I will report on two new attack vectors we have identified in such networks, one concerning the controller itself (our paper at Euro Security&Privacy 2017) and one concerning the virtualized switches which can be exploited to attack the cloud (see [Reigns to the Cloud: Compromising Cloud Systems via the Data Plane](#)).

**Bio:** Stefan Schmid is an Associate Professor at Aalborg University, Denmark. Before that, he was a senior research scientist at T-Labs, Berlin, a postdoc at TU Munich, and a PhD student at ETH Zurich. Stefan's research interests revolve around the fundamental problems of dynamic distributed systems and networks. In particular, Stefan is currently the PI of a German-Israeli GIF project with Dr. Chen Avin on Self-Adjusting Distributed Systems.

Stefan Schmid is currently also looking for PhD and Postdoc students.

For more information, see: [Homepage](#).

15:00 – 16:00 on Sunday December 11, 2016 — Room 202, Alon Building (37/202)  
(202/37) יום א' 11 דצמבר 2016 – בחדר 202 בבניין אלון (202/37)