

CYBER-PHYSICAL SYSTEMS FOR VEHICLE-IN-THE-FLOW TRAFFIC FLOW CONTROL

Thursday, January 30
12:00 - 1:15 PM (US Arizona)

College Avenue Commons
(CAVC) Room 333



Jonathan Sprinkle, PhD
Litton Industries John M. Leonis
Distinguished Associate Professor
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Tucson, AZ

About the Talk

This talk describes previous and ongoing research in traffic flow control that involve the University of Arizona CAT Vehicle Testbed. The focus of the research is real-time control of vehicle velocity in order to effect the velocity of other vehicles in the flow. Research and results are told through the lens of several physical validation experiments. The first experiment explores how to dampen emerging waves in traffic that are due to congestive effects. This experiment grew out of theory of how traffic flow could be improved through sparse velocity control (e.g., ~5% of the vehicles) in the flow. The second experiment examines an analogous case, where 100% of the vehicles are controlled, though this time using off-the-shelf (rather than customized) cruise control algorithms. The talk will examine the hypotheses, methods, and results of these experiments, and explore the theory and motivation for the research as a means to provide insights into the obtained results. The research was sponsored by the National Science Foundation under award CNS-1446435, the Department of Energy through contract DE-EE0008872, and is collaborative work with Benedetto Piccoli, Benjamin Seibold, Dan Work, and Alexandre Bayen.

About the Speaker

Dr. Jonathan Sprinkle is the Litton Industries John M. Leonis Distinguished Associate Professor of Electrical and Computer Engineering at the University of Arizona. In 2013 he received the NSF CAREER award, and in 2009, he received the UA's Ed and Joan Biggers Faculty Support Grant for work in autonomous systems. His work has an emphasis for industry impact, and he was recognized with the UA "Catapult Award" by Tech Launch Arizona in 2014, and in 2012 his team won the NSF I-Corps Best Team award. From 2017-2019 he served as a Program Director at the National Science Foundation in the division of Computer and Networked Systems. His research interests and experience are in cyber-physical systems control and engineering, and he teaches courses ranging from systems modeling and control to mobile application development and software engineering.

This seminar is webcast live to a worldwide audience by
ASU Engineering – Global Outreach and Extended Education (GOEE).
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Light refreshments will be served. Event is open to the public.



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