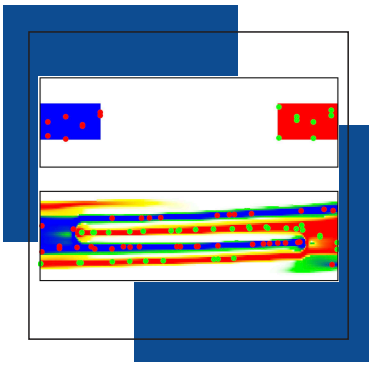
institute for pure & applied mathematics

Social Dynamics beyond Vehicle Autonomy

November 30 - December 4, 2020



Scientific Overview

In some application fields, automation will eventually remove humans from the loop, and autonomous systems will operate far away from any human agents. Not so with autonomous vehicles. Recent trends in urbanization are showing that future cities will flourish with human activity (pedestrians, bicycles), and autonomous vehicles will need to actively work with and around the humans. The development of autonomous vehicles can therefore not be undertaken without a better understanding of human nature, including but not limited to: pedestrian motion and decisionmaking, heterogeneous traffic (bicycles, mopeds, buses, cars), cyber-security, and crime modeling. At the same time, with full autonomy (level 5, which removes the human from the driving process), a fundamental paradigm shift will occur in how we, as humans and as a society, will see, perceive, and interpret the process of driving. This workshop brings together researchers from a variety of disciplines, including experts on social/behavioral, ethics, legal, and policy aspects, as well as researchers working on other heterogeneous systems (swarming and animal motion/migration, distributed leaders and sparse control, cell biology) that can serve as inspirations.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

Long Program Schedule

This workshop is part of the long program on "Mathematical Challenges and Opportunities for Autonomous Vehicles."

- Autonomous Vehicles Opening Day : September 14, 2020
- Mathematical Challenges and Opportunities for Autonomous Vehicles Tutorials : September 15 - 18, 2020
- Workshop I: Individual Vehicle Autonomy: Perception and Control : October 5 - 9, 2020
- Workshop II: Safe Operation of Connected and Autonomous Vehicle Fleets : October 26 - 30, 2020
- Workshop III: Large Scale Autonomy: Connectivity and Mobility Networks : November 16 - 20, 2020
- **Workshop IV: Social Dynamics beyond Vehicle Autonomy : November 30 - December 4, 2020**
- Autonomous Vehicles Culminating Retreat at Lake Arrowhead : December 13 - 18, 2020

Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

Organizers

Spring Berman (ASU), Sebastian Motsch (ASU), Benedetto Piccoli (Rutgers University), and Joan Walker (UC Berkeley).

Speakers

Alethea Barbaro (CWRU), Andrea Bertozzi (UCLA), Tierra Bills (Wayne), Silvia Ferrari (Cornell), Michael Herty (RWTH Aachen University), David Hess (Vanderbilt University), Dasom Lee (Vanderbilt University), Gary Marchant (ASU), Kristi Morgansen (UW), Ted Pavlic (ASU), Armin Seyfried (Jülich Research Center), Susan Shaheen (UC Berkeley), Jack Stilgoe (University College London), Joan Walker (UC Berkeley), and Marie-Therese Wolfram (University of Warwick).

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For more information, visit the program webpage:

www.ipam.ucla.edu/avws4