

## Final Report: *33<sup>rd</sup> Southern California Control Workshop*

The 33<sup>rd</sup> Southern California Control Workshop was held on October 20, 2017 at the University of California, Santa Barbara (UCSB). Over 130 faculty and students from universities in the Southern California area attended the event. Registration included 44 participants from UCSB, 16 participants from UC San Diego, 8 participants from UC Riverside, 20 participants from USC, 7 participants from UCLA, 12 participants from Caltech, 14 participants from UC Irvine, 3 participants from California State University at Long Beach, 1 participant from UC Santa Cruz, and 7 registrants who did not specify their affiliation. Several additional students from these universities also attended but did not register. Hence, a reasonable estimate of the total attendance is 150 people. A geographical “heat map” of registrants is shown in an appendix.

The workshop included 19 talks, each 20 minutes long, presented by graduate students and post-doctoral students from the participating universities. Topics included distributed optimization, control of power and energy systems and networks, multi-agent systems, biological systems, Markov chains and Markov decision processes, PDEs, and inertial navigation. The program is included as an appendix, as is a photo of one of the lectures.

In addition to the talks, two 30-minute coffee breaks enabled the participants to network with other students and faculty and look for common research interests. Another opportunity for interaction was provided by the 90-minute lunch period; the provided lunches encouraged the participants to stay near the workshop location and discuss their work and plans. Photos of the lunch are provided in the appendix.

The discussions during the question and answer sessions as well as during the breaks were very lively. Overall, the workshop appears to have made a very positive impression on the students who participated. In summary, the workshop was a tremendous success. The organizers are grateful to the IEEE CSS Outreach Fund Committee for choosing to provide partial support for the workshop.

## Appendices



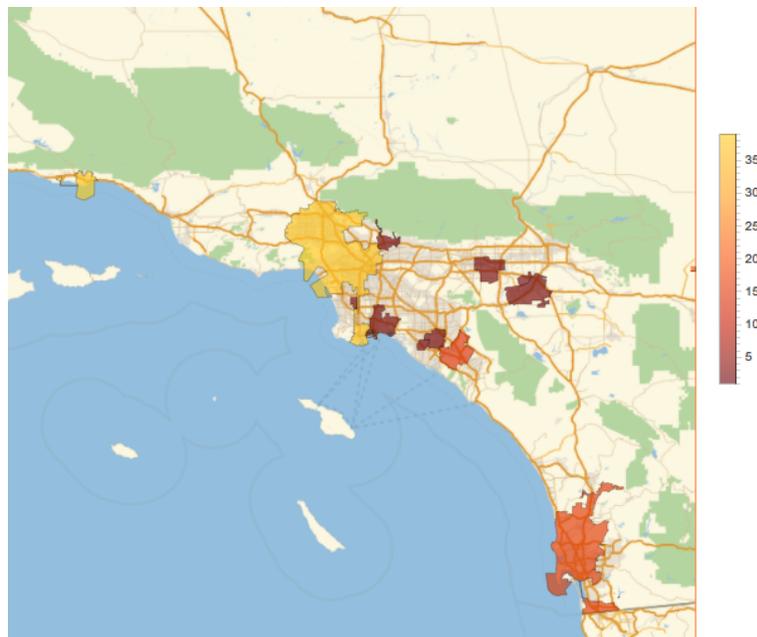
One of 19 lectures from the 33rd Southern California Control Workshop, October 20, 2017.



Lunch at the 33rd Southern California Control Workshop, October 20, 2017



Lunch at the 33rd Southern California Control Workshop, October 20, 2017



A geographical "heat map" of workshop participants.

## 33<sup>rd</sup> Southern California Control Workshop

October 20, 2017, UCSB, Loma Pelona Center, 8:30am-5:30pm

8:30-9:00am Continental breakfast

### Session 1

9:00-9:20am	Henrique Ferraz (UCSB, Hespanha)	Node Localization Based on Distributed Constrained Optimization
9:20-9:40am	Sepideh Hassan-Moghaddam (USC, Jovanovic)	A primal-dual algorithm for distributed non-smooth composite optimization
9:40-10:00am	Tor Anderson (UCSD, Martinez)	Weight Design of Distributed Approximate Newton Methods for Constrained Optimization
10:00-10:20am	Mishel George (UCSB, Bullo)	Markov chains with Maximum Entropy for Robotic Surveillance
10:20-10:40am	Zahra Askarzadeh (UCI, Georgiou)	ell_1 stability theory for nonlinear Markov chains

Coffee Break (30 minutes)

### Session 2

11:10-11:30am	Yifu Zhang (UCSD, Cortes)	Transient frequency control of power networks ---a set invariance approach
11:30-11:50am	Samantha Samuelson (USC, Yang)	Data-Driven Distributionally Robust Control of Energy Storage to Manage Wind Power Fluctuations
11:50-12:10pm	Edward Sanchez (CSULB, Nazari)	Model Predictive Energy Scheduling in Building Microgrid
12:10-12:30pm	Qin Ba (USC, Savla)	Robustness of DC Networks with Controllable Link Weights

Lunch (hour)

### Session 3

1:30-1:50pm	Anh Tran (UCLA, Christofides)	CFD Modeling and Balancing of a Steam Methane Reforming Furnace
1:50-2:10pm	Philip Brown (UCSB, Marden)	Are Multiagent Systems Resilient to Communication Failures?
2:10-2:30pm	Xinying Ren (Caltech, Murray)	Population Regulation in Microbial Consortia Using Dual Feedback Control
2:30-2:50pm	Xun Tang (UCR, Franco)	RNA-based feedback to regulate gene expression

Coffee Break (30 minutes)

### Session 4

3:20-3:40pm	Ahmed Hassan (UCI, Taha)	Vibrational stabilization in insect flight
3:40-4:00pm	Petter Nilsson (Caltech, Ames)	Mitigating the Curse of Dimensionality in Correct-by-Construction Control Synthesis
4:00-4:20pm	Hiteshi Sharma (USC, Jain)	An Empirical Dynamic Programming Algorithm for Continuous MDPs
4:20-4:40pm	Salar Rahili (Caltech, Chung)	Optimal Decision Making of Transportation Companies for Urban Mobility Using Air Vehicles
4:40-5:00pm	Leobardo Camacho (UCSD, Krstic)	Boundary Observer Design for Radial Diffusion-Reaction Equations in the Presence of Measurement Noise
5:00-5:20pm	Joshua Morales (UCR, Kassas)	Distributed Signals of Opportunity Aided Inertial Navigation with Intermittent Communication