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# Scott Moura

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## Education

**UC President's Postdoctoral Fellow (2011-2013)** **University of California, San Diego**

Topic: *PDE Control and Estimation Techniques for Advanced Battery Management Systems*  
Advisor: Professor Miroslav Krstić

**Ph.D., Mechanical Engineering (2011)** **University of Michigan, Ann Arbor**

Dissertation: *Techniques for Battery Health Conscious Power Management via Electrochemical Modeling and Optimal Control*

Advisors: Professor Jeffrey L. Stein (Michigan) and Professor Hosam K. Fathy (Penn State)

Committee: Prof. Jeffrey Stein (Michigan-ME), Prof. Hosam Fathy (Penn State-MNE), Prof. Hwei Peng (Michigan-ME), Prof. Jessy Grizzle (Michigan-EECS:Systems)

Major Field: Systems and Controls

**M.S.E, Mechanical Engineering (2008)** **University of Michigan, Ann Arbor**

Thesis: *Plug-in Hybrid Electric Vehicle Power Management: Optimal Control & Battery Sizing*

Advisors: Professor Jeffrey L. Stein (Michigan), Professor Hosam K. Fathy (Penn State), and Professor Duncan S. Callaway (UC Berkeley)

Major Field: Systems and Controls

**B.S., Mechanical Engineering (2006)** **University of California, Berkeley**

Graduated with Honors

**Research Interests:** Optimal control, PDE control, estimation, adaptive control, dynamic system modeling, energy management, battery management systems, vehicle-grid integration, smart grid.

## Awards & Honors

**Best Student Paper Finalist (as advisor, student is Saehong Park) (2018)**

2018 American Control Conference, Milwaukee, WI USA

**National Academy of Engineering, China-America Frontiers of Engineering Participant (2017)**

**Carol D. Soc Distinguished Graduate Student Mentoring Award for Junior Faculty (2017)**

**1<sup>st</sup> LG Chem Battery Innovation Contest Winner (2017)**

**Blavatnik Awards for Young Scientists – UC Berkeley Campus nominee (2016)**

**O. Hugo Schuck Best Paper Award, American Control Conference (2015)**

“Sensitivity-Based Interval PDE Observer for Battery SOC Estimation”

**IEEE Transactions on Smart Grid Best Reviewer Award (2015)**

**Siebel Energy Institute Research Grant (2 awards) (2015)**

**Energy Systems Best Paper Award**

2015 ASME Dynamic Systems and Control Conference, Columbus, OH USA

**Best Student Paper Award (as advisor, student is Hector Perez)**

2015 American Control Conference, Chicago, IL USA

**Hellman Fellow (2015)**

**University of California Presidential Postdoctoral Fellowship**

University of California (2011 - 2013)

**National Science Foundation (NSF) Graduate Research Fellowship**

National Science Foundation (2008 - 2011)

**ProQuest Distinguished Dissertation Award, Honorable Mention**

Rackham Graduate School, University of Michigan (2011)

**Distinguished Leadership Award**

College of Engineering, University of Michigan (2009)

**Rackham Merit Fellowship (RMF)**

University of Michigan Rackham Graduate School (2006 – 2011)

**2012 ASME Dynamic Systems and Control Conference, Ft Lauderdale, CA USA**

Semi-Plenary Speaker

Best Presentation in Session

**2012 American Control Conference, Montreal, QC Canada**

Best Presentation in Session

**2011 American Control Conference, San Francisco, CA USA**

Best Student Paper Finalist

Best Presentation in Session

**2009 ASME Dynamic Systems and Control Conference, Hollywood, CA USA**

Best Student Paper Finalist

Best Presentation in Session

**2009 American Control Conference, Baltimore, MD USA**

Best Presentation in Session

**2008 ASME Dynamic Systems and Control Conference, Ann Arbor, MI USA**

Best Presentation in Session

**2008 Society of Hispanic Professional Engineers Conference, Phoenix, AZ USA**

1<sup>st</sup> Place Technical Paper Competition

**2008 Engineering Graduate Symposium, University of Michigan**

2<sup>nd</sup> Place Poster, Control Systems Session

**2007 Engineering Graduate Symposium, University of Michigan**

2<sup>nd</sup> Place Oral Presentation, System Analysis and Control Session

**Michigan Memorial Phoenix Energy Institute (MMPEI)**

MMPEI-Rackham Energy Fellowship, Honorable Mention (2007 – 2008)

**SHPE Academic Achievement Award**

Society of Hispanic Engineers and Scientists, University of Michigan (2007)

**National Science Foundation (NSF)**

Graduate Research Fellowship Program (GRFP), Honorable Mention (2006 – 2007)

## **Publications**

Total Citations  $\geq$  2650 | h-index = 25 | i10-index = 54 ([Google Scholar](#), May 2018)

**Bold names** indicate my Ph.D. student at UC Berkeley

### **Peer-Reviewed Journals**

- J1. S. J. Moura, D. S. Callaway, H. K. Fathy, and J. L. Stein, "Tradeoffs between Battery Energy Capacity and Stochastic Optimal Power Management in Plug-in Hybrid Electric Vehicles," *Journal of Power Sources*, v 195, n 9, p 2979-2988, May 2010. DOI: [10.1016/j.jpowsour.2009.11.026](https://doi.org/10.1016/j.jpowsour.2009.11.026)
- J2. S. Bashash, S. J. Moura, J. C. Forman, and H. K. Fathy, "Plug-in hybrid electric vehicle charge pattern optimization for energy cost and battery longevity," *Journal of Power Sources*, v 196, n 1, p 541-549, January 2011. DOI: [10.1016/j.jpowsour.2010.07.001](https://doi.org/10.1016/j.jpowsour.2010.07.001)
- J3. S. J. Moura, H. K. Fathy, D. S. Callaway, and J. L. Stein, "A Stochastic Optimal Control Approach for Power Management in Plug-in Hybrid Electric Vehicles," *IEEE Transactions on Control Systems Technology*, v 19, n 3, p 545-555, May 2011. DOI: [10.1109/TCST.2010.2043736](https://doi.org/10.1109/TCST.2010.2043736)
- J4. S. J. Moura, J. C. Forman, S. Bashash, J. L. Stein, and H. K. Fathy, "Optimal Control of Film Growth in Lithium-Ion Battery Packs via Relay Switches," *IEEE Transactions on Industrial Electronics*, v 58, n 8, p 3555-3566, Aug 2011. DOI: [10.1109/TIE.2010.2087294](https://doi.org/10.1109/TIE.2010.2087294)
- J5. S. Bashash, S. J. Moura, and H. K. Fathy, "On the Aggregated Grid Load Imposed by Battery Health-Conscious Charging of Plug-in Hybrid Electric Vehicles," *Journal of Power Sources*, v 196, n 20, p 8747-8754, Oct 2011. DOI: [10.1016/j.jpowsour.2011.06.025](https://doi.org/10.1016/j.jpowsour.2011.06.025)
- J6. J. C. Forman, S. J. Moura, J. L. Stein, H. K. Fathy, "Genetic Identification and Fisher Identifiability Analysis of the Doyle-Fuller-Newman Model from Experimental Cycling of a LiFePO<sub>4</sub> Cell," *Journal of Power Sources*, v 210, p 263-275, July 2012. DOI: [10.1016/j.jpowsour.2012.03.009](https://doi.org/10.1016/j.jpowsour.2012.03.009)
- J7. S. J. Moura and H. K. Fathy, "Optimal Boundary Control of Reaction-Diffusion PDEs via Weak Variations," *ASME Journal of Dynamic Systems, Measurement, and Control*, v 135, n 3, pp. 034501-034508, Feb 2013. DOI: [10.1115/1.4023071](https://doi.org/10.1115/1.4023071)
- J8. S. J. Moura, J. L. Stein, and H. K. Fathy, "Battery Health Conscious Power Management in Plug-in Hybrid Electric Vehicles via Electrochemical Modeling and Stochastic Control," *IEEE Transactions on Control Systems Technology*, v 21, n 3, pp. 679-694, May 2013. DOI: [10.1109/TCST.2012.2189773](https://doi.org/10.1109/TCST.2012.2189773)
- J9. S. J. Moura and Y. A. Chang, "Lyapunov-based Switched Extremum Seeking for Photovoltaic Power Maximization," *Control Engineering Practice*, v 21, n 7, pp. 971-980, July 2013. DOI: [10.1016/j.conengprac.2013.02.009](https://doi.org/10.1016/j.conengprac.2013.02.009)
- J10. S. J. Moura, N. A. Chaturvedi, M. Krstic, "Adaptive PDE Observer for Battery SOC/SOH Estimation via an Electrochemical Model," *ASME Journal of Dynamic Systems, Measurement, and Control*, v 136, n 1, pp. 011015 – 011026, Oct 2013. DOI: [10.1115/1.4024801](https://doi.org/10.1115/1.4024801)
- J11. S. J. Moura, J. Bendsten, V. Ruiz, "Parameter Identification of Aggregated Thermostatically Controlled Loads for Smart Grids using PDE Techniques," *International Journal of Control*, v 87, n 7, pp. 1373-1386, May 2014 (Invited Paper). DOI: [10.1080/00207179.2014.915083](https://doi.org/10.1080/00207179.2014.915083)
- J12. **C. Sun**, X. Hu, S. J. Moura, F. Sun, "Velocity Predictors for Predictive Energy Management in Hybrid Electric Vehicles," *IEEE Transactions on Control Systems Technology*, v 23, n 3, pp. 1197-1204, May 2015. DOI: [10.1109/TCST.2014.2359176](https://doi.org/10.1109/TCST.2014.2359176)

- J13. **C. Sun**, S. J. Moura, X. Hu, J. K. Hedrick, F. Sun, “Dynamic Traffic Feedback Data Enabled Energy Management in Plug-in Hybrid Electric Vehicles,” *IEEE Transactions on Control Systems Technology*, v 23, n 3, pp. 1075-1086, May 2015. DOI: [10.1109/TCST.2014.2361294](https://doi.org/10.1109/TCST.2014.2361294)
- J14. S. Saxena, **C. Le Floch**, J. MacDonald, S. J. Moura, “Quantifying EV Battery End-of-Life through Analysis of Travel Needs with Vehicle Powertrain Models,” *Journal of Power Sources*, v 282, n 15, pp. 265-276, May 2015. DOI: [10.1016/j.jpowsour.2015.01.072](https://doi.org/10.1016/j.jpowsour.2015.01.072)
- J15. A Ghaffari, S. J. Moura, M. Krstic, “PDE-based Modeling, Control, and Stability Analysis of Heterogeneous Thermostatically Controlled Load Populations,” *ASME Journal of Dynamic Systems, Measurement, and Control*, v 137, n 10, pp. 101009-101009-9, July 2015. DOI: [10.1115/1.4030817](https://doi.org/10.1115/1.4030817).
- J16. **H. E. Perez**, N. Shahmohammadhamedani, S. J. Moura, “Enhanced Performance of Li-ion Batteries via Modified Reference Governors & Electrochemical Models,” *IEEE/ASME Transactions on Mechatronics*, v 20, n 4, pp. 1511-1520, Aug 2015. DOI: [10.1109/TMECH.2014.2379695](https://doi.org/10.1109/TMECH.2014.2379695)
- J17. S. Saxena, J. MacDonald, S. J. Moura, “Charging Ahead on the Transition to Electric Vehicles with Standard 120 V Wall Outlets,” *Applied Energy*, v 157, pp. 720-728, Nov 2015. DOI: [10.1016/j.apenergy.2015.05.005](https://doi.org/10.1016/j.apenergy.2015.05.005)
- J18. **E. Burger**, S. J. Moura, “Gated Ensemble Learning Method for Demand-Side Electricity Load Forecasting,” *Energy and Buildings*, v 109, pp. 23-34, Dec 2015. DOI: [10.1016/j.enbuild.2015.10.019](https://doi.org/10.1016/j.enbuild.2015.10.019).
- J19. X. Hu, N. Murgovski, B. Egardt, S. J. Moura, D. Cao, “Integrated Optimization of Battery Sizing, Charging, and Power Management in Plug-in Hybrid Electric Vehicles,” *IEEE Transactions on Control Systems Technology*, vol. 24, no. 3, pp. 1036-1043, May 2016. DOI: [10.1109/TCST.2015.2476799](https://doi.org/10.1109/TCST.2015.2476799).
- J20. **C. Le Floch**, F. Belletti, S. J. Moura, “Optimal Charging of Electric Vehicles for Load Shaping: a Dual Splitting Framework with Explicit Convergence Bounds,” *IEEE Transactions on Transportation Electrification*, vol. 2, no. 2, pp. 190-199, June 2016. DOI: [10.1109/TTE.2016.2531025](https://doi.org/10.1109/TTE.2016.2531025).
- J21. **C. Sun**, F. Sun, S. J. Moura, “Nonlinear Predictive Energy Management of Residential Buildings with Photovoltaics & Batteries,” *Journal of Power Sources*, v 325, pp. 723-731, Sep 2016. DOI: [10.1016/j.jpowsour.2016.06.076](https://doi.org/10.1016/j.jpowsour.2016.06.076)
- J22. X. Wu, X. Hu, S. J. Moura, X. Yin, V. Pickert, “Stochastic Control of Smart Home Energy Management with PEV Energy Storage and Photovoltaic Array,” *Journal of Power Sources*, v 333, pp. 203-212, Nov 2016. DOI: [10.1016/j.jpowsour.2016.09.157](https://doi.org/10.1016/j.jpowsour.2016.09.157)
- J23. **E. Burger**, S. J. Moura, “Recursive Parameter Estimation of Thermostatically Controlled Loads via Unscented Kalman Filter,” *Sustainable Energy, Grids and Networks*, v 8, pp. 12-25, Dec 2016. DOI: [10.1016/j.segan.2016.09.001](https://doi.org/10.1016/j.segan.2016.09.001)
- J24. B. Wang, Z. Liu, S. Li, S J. Moura, H. Peng, “State of Charge Estimation for Lithium-Ion Batteries Based on a Nonlinear Fractional Model,” *IEEE Transactions on Control Systems Technology*, v 25, n 1, pp. 3-11, Jan 2017. DOI: [10.1109/TCST.2016.2557221](https://doi.org/10.1109/TCST.2016.2557221)
- J25. S. J. Moura, F. Bribiesca Argomedo, R. Klein, A. Mirtabatabaei, M. Krstic, “Battery State Estimation for a Single Particle Model with Electrolyte Dynamics,” *IEEE Transactions on Control Systems Technology*, v 25, n 2, pp. 453-468. Mar 2017. DOI: [10.1109/TCST.2016.2571663](https://doi.org/10.1109/TCST.2016.2571663)

- J26. **E. Burger**, S. J. Moura, “Generation Following with Thermostatically Controlled Loads via Alternating Direction Method of Multipliers Sharing Algorithm,” *Electric Power Systems Research*, v 146, pp. 141-160, Mar 2017. DOI: [10.1016/j.epsr.2016.12.001](https://doi.org/10.1016/j.epsr.2016.12.001)
- J27. **H. E. Perez**, S. Dey, X. Hu, S. J. Moura, “Optimal Charging of Li-Ion Batteries via a Single Particle Model with Electrolyte and Thermal Dynamics,” *Journal of the Electrochemical Society*, v 164, n 7, pp. A1679-A1687, June 2017. DOI: [10.1149/2.1301707jes](https://doi.org/10.1149/2.1301707jes)
- J28. **H. E. Perez**, X. Hu, S. Dey, S. J. Moura, “Optimal Charging of Li-Ion Batteries with Coupled Electro-Thermal-Aging Dynamics,” *IEEE Transactions on Vehicular Technology*, v 66, n 9, pp. 7761-7770, September 2017. DOI: [10.1109/TVT.2017.2676044](https://doi.org/10.1109/TVT.2017.2676044)
- J29. **C. Le Floch**, E. C. Kara, S. J. Moura, “PDE Modeling and Control of Electric Vehicle Fleets for Ancillary Services: A Discrete Charging Case,” *IEEE Transactions on Smart Grid*, v9, n 2, pp. 573-581, March 2018. DOI: [10.1109/TSG.2016.2556643](https://doi.org/10.1109/TSG.2016.2556643)
- J30. X. Wu, S. J. Moura, X. Hu, X. Yin, “Stochastic Optimal Energy Management of Smart Home with PEV Energy Storage,” *IEEE Transactions on Smart Grid*, v9, n 3, pp. 2065-2075, May 2018. DOI: [10.1109/TSG.2016.2606442](https://doi.org/10.1109/TSG.2016.2606442)
- J31. **S. Park, D. Kato, Z. Gima**, R. Klein, S. J. Moura, “Optimal Experimental Design for Parameterization of an Electrochemical Lithium-ion Battery Model,” *Journal of the Electrochemical Society*, v 165, n 7, pp. A1309-A1323, May 2018. DOI: [10.1149/2.0421807jes](https://doi.org/10.1149/2.0421807jes)
- J32. **H. Zhang**, S. J. Moura, Z. Hu, W. Qi, Y. Song, “A Second Order Cone Programming Model for PEV Fast-Charging Station Planning,” *IEEE Transactions on Power Systems*, v33, n 3, pp. 2763-2777, May 2018. DOI: [10.1109/TPWRS.2017.2754940](https://doi.org/10.1109/TPWRS.2017.2754940)
- J33. **H. Zhang**, S. J. Moura, Z. Hu, Y. Song, “PEV Fast-Charging Station Siting and Sizing on Coupled Transportation and Power Networks,” *to appear in IEEE Transactions on Smart Grid*. DOI: [10.1109/TSG.2016.2614939](https://doi.org/10.1109/TSG.2016.2614939)
- J34. **C. Le Floch**, S. Bansal, C. Tomlin, S. J. Moura, M. Zeilinger, “Plug-and-Play Model Predictive Control for Load Shaping and Voltage Control in Smart Grids,” *to appear in IEEE Transactions on Smart Grid*. DOI: [10.1109/TSG.2017.2655461](https://doi.org/10.1109/TSG.2017.2655461)
- J35. S. Dey, **H. Perez**, S. J. Moura, “Model-based Battery Thermal Fault Diagnostics: Algorithms, Analysis and Experiments,” *to appear IEEE Transactions on Control Systems Technology*. DOI: [10.1109/TCST.2017.2776218](https://doi.org/10.1109/TCST.2017.2776218)
- J36. **H. Zhang**, Z. Hu, **E. Munsing**, S. J. Moura, Y. Song, “Data-driven Chance-constrained Regulation Capacity Offering for Distributed Energy Resources,” *to appear in IEEE Transactions on Smart Grid*. DOI: [10.1109/TSG.2018.2809046](https://doi.org/10.1109/TSG.2018.2809046)
- J37. Y. Xu, S. Colak, E. C. Kara, S. J. Moura, M. Gonzalez, “Planning for Electric Vehicle Needs by Coupling Charging Profiles with Urban Mobility,” *to appear in Nature Energy*. DOI: [10.1038/s41560-018-0136-x](https://doi.org/10.1038/s41560-018-0136-x)

#### Peer-Reviewed Journals (In Review)

- J38. **H. Zhang**, S. J. Moura, Z. Hu, W. Qi, Y. Song, “Joint Planning of PEV Fast-Charging Network and Distributed PV Generation Using the Accelerated Generalized Benders Decomposition.”
- J39. **D. Zhang**, S. Dey, H. E. Perez, S. J. Moura, “Real-Time Capacity Estimation of Lithium-Ion Batteries Utilizing Thermal Dynamics.”
- J40. S. Dey, **H. E. Perez**, S. J. Moura, “Robust Fault Diagnosis of a Class of Uncertain Parabolic PDEs”



- J41. C. Sun, J. Guanetti, F. Borrelli, S. J. Moura, “Robust Eco-Driving Control of Autonomous Vehicles Connected to Traffic Lights.”
- J42. M. Hao, J. Li, **S. Park**, S. J. Moura, C. Dames, “Thermal management of lithium ion batteries using a passive thermal regulator.”
- J43. S. Dey, S. J. Moura, “Robust Fault Detection of the Wave Equations with Threshold-based Approach.”
- J44. **D. Zhang**, S. Dey, L. Couto, S. J. Moura, “Battery Adaptive Observer for a Single Particle Model with Intercalation-Induced Stress.”
- J45. N. DeForest, G. Cardoso, R. E. Brown, S. J. Moura, H. Fraker, D. Kammen, “Optimal Planning of Oakland EcoBlock: A Community-Scale Residential Solar Microgrid.”

### Refereed Conferences Proceedings

- C1. S. J. Moura, H. K. Fathy, D. S. Callaway, J. L. Stein, “A Stochastic Optimal Control Approach for Power Management in Plug-in Hybrid Electric Vehicles,” *2008 ASME Dynamic Systems and Control Conference*, Ann Arbor, MI, 2008. DOI: [10.1115/DSCC2008-2252](https://doi.org/10.1115/DSCC2008-2252)
- C2. S. J. Moura, D. S. Callaway, H. K. Fathy, and J. L. Stein, “Impact of Battery Sizing on Stochastic Optimal Power Management in Plug-in Hybrid Electric Vehicles,” *2008 IEEE International Conference on Vehicular Electronics & Safety*, pp. 96-102, Columbus, OH, 2008. (Invited Paper). DOI: [10.1109/ICVES.2008.4640902](https://doi.org/10.1109/ICVES.2008.4640902)
- C3. Y. A. Chang, S. J. Moura, “Air-Flow Control in Fuel Cell Systems: An Extremum Seeking Approach,” *2009 American Control Conference*, St. Louis, MO, 2009. DOI: [10.1109/ACC.2009.5160016](https://doi.org/10.1109/ACC.2009.5160016)
- C4.** S. J. Moura, J. C. Forman, J. L. Stein, H. K. Fathy, “Control of Film Growth in Lithium Ion Battery Packs via Switches,” *2009 ASME Dynamic Systems and Control Conference*, Hollywood, CA, 2009. **DSCC Best Student Paper Finalist.** DOI: [10.1115/DSCC2009-2724](https://doi.org/10.1115/DSCC2009-2724)
- C5. S. J. Moura, Y. A. Chang “Asymptotic Convergence through Lyapunov-Based Switching in Extremum Seeking with Application to Photovoltaic Systems,” *2010 American Control Conference*, Baltimore, MD, 2010. DOI: [10.1109/ACC.2010.5530764](https://doi.org/10.1109/ACC.2010.5530764)
- C6. S. Bashash, S. J. Moura, H. K. Fathy “Charge Trajectory Optimization of Plug-in Hybrid Electric Vehicles for Energy Cost Reduction and Battery Life Enhancement,” *2010 American Control Conference*, Baltimore, MD, 2010. DOI: [10.1109/ACC.2010.5530497](https://doi.org/10.1109/ACC.2010.5530497)
- C7. S. J. Moura, J. B. Siegel, D. J. Siegel, H. K. Fathy, A. G. Stefanopoulou, “Education on Vehicle Electrification: Battery Systems, Fuel Cells, and Hydrogen,” *2010 IEEE Vehicle Power and Propulsion Conference*, Lille, France, 2010. DOI: [10.1109/VPPC.2010.5729150](https://doi.org/10.1109/VPPC.2010.5729150)
- C8. S. J. Moura, J. L. Stein, H. K. Fathy, “Battery Health-Conscious Power Management for Plug-in Hybrid Electric Vehicles via Stochastic Control,” *2010 ASME Dynamic Systems and Control Conference*, Cambridge, MA, 2010. DOI: [10.1115/DSCC2010-4089](https://doi.org/10.1115/DSCC2010-4089)
- C9. S. Bashash, S. J. Moura, H. K. Fathy, “Battery Health-Conscious Plug-in Hybrid Electric Vehicle Power Demand Prediction,” *ASME Dynamic Systems & Control Conf.*, Cambridge, MA, 2010. DOI: [10.1115/DSCC2010-4197](https://doi.org/10.1115/DSCC2010-4197)
- C10. S. J. Moura, H. K. Fathy, “Optimal Boundary Control & Estimation of Diffusion-Reaction PDEs,” *2011 American Control Conf.*, San Francisco, CA, 2011. **ACC Best Student Paper Finalist.** DOI: [10.1109/ACC.2011.5990900](https://doi.org/10.1109/ACC.2011.5990900)

- C11. J. C. Forman, S. J. Moura, J. L. Stein, H. K. Fathy, "Genetic Parameter Identification of the Doyle-Fuller-Newman Model From Experimental Cycling of a Li-ion LiFePO<sub>4</sub> Battery," *2011 American Control Conference*, San Francisco, CA, 2011. DOI: [10.1109/ACC.2011.5991183](https://doi.org/10.1109/ACC.2011.5991183)
- C12. S. J. Moura, N. A. Chaturvedi, M. Krstic "PDE Estimation Techniques for Advanced Battery Management Systems - Part I: SOC Estimation," *2012 American Control Conference*, Montreal, Canada, 2012. (Invited Paper). DOI: [10.1109/ACC.2012.6315019](https://doi.org/10.1109/ACC.2012.6315019)
- C13. S. J. Moura, N. A. Chaturvedi, M. Krstic "PDE Estimation Techniques for Advanced Battery Management Systems - Part II: SOH Identification," *2012 American Control Conference*, Montreal, Canada, 2012. (Invited Paper). DOI: [10.1109/ACC.2012.6315020](https://doi.org/10.1109/ACC.2012.6315020)
- C14. S. J. Moura, N. A. Chaturvedi, M. Krstic, "Adaptive PDE Observer for Battery SOC/SOH Estimation," *ASME Dynamic Systems and Control Conference*, Ft. Lauderdale, FL, 2012. **DSCC Semi-Plenary**. DOI: [10.1115/DSCC2012-MOVIC2012-8800](https://doi.org/10.1115/DSCC2012-MOVIC2012-8800)
- C15. J. C. Forman, S. J. Moura, J. L. Stein, H. K. Fathy, "Optimal Experimental Design for Modeling Battery Degradation," *ASME Dynamic Systems and Control Conf.*, Ft. Lauderdale, FL, 2012. DOI: [10.1115/DSCC2012-MOVIC2012-8751](https://doi.org/10.1115/DSCC2012-MOVIC2012-8751)
- C16. P. Wolf, S. J. Moura, M. Krstic, "On Optimal Sensor Placement for Spatio-Temporal Temperature Estimation in Large Battery Packs," *51<sup>st</sup> IEEE Conference on Decision and Control*, Maui, HI, 2012. (Invited Paper). DOI: [10.1109/CDC.2012.6426191](https://doi.org/10.1109/CDC.2012.6426191)
- C17. S. J. Moura, N. A. Chaturvedi, M. Krstic, "Constraint Management in Li-ion Batteries: A Modified Reference Governor Approach," *2013 American Control Conference*, Washington, D.C., 2013. (Invited Paper). DOI: [10.1109/ACC.2013.6580670](https://doi.org/10.1109/ACC.2013.6580670)
- C18. S. J. Moura, V. Ruiz, J. Bendsten, "Modeling Heterogeneous Populations of Thermostatically Controlled Loads using Diffusion-Advection PDEs," *ASME Dynamic Systems and Control Conference*, Stanford, CA, 2013. DOI: [10.1115/DSCC2013-3809](https://doi.org/10.1115/DSCC2013-3809)
- C19. S. J. Moura, J. Bendsten, V. Ruiz, "Observer Design for Boundary Coupled PDEs: Application to Thermostatically Controlled Loads in Smart Grids." *52<sup>nd</sup> IEEE Conference on Decision and Control*, Florence, Italy, 2013. (Invited Paper). DOI: [10.1109/CDC.2013.6760883](https://doi.org/10.1109/CDC.2013.6760883)
- C20. **C. Sun**, X. Hu, S. J. Moura, F. Sun, "Comparison of Velocity Forecasting Strategies for Predictive Control in HEVs," *ASME Dynamic Systems and Control Conference*, San Antonio, TX, 2014. DOI: [10.1115/DSCC2014-6031](https://doi.org/10.1115/DSCC2014-6031)
- C21. A. Ghaffari, S. J. Moura, M. Krstic, "Analytic Modeling and Integral Control of Heterogeneous Thermostatically Controlled Load Populations," *ASME Dynamic Systems and Control Conference*, San Antonio, TX, 2014. DOI: [10.1115/DSCC2014-6022](https://doi.org/10.1115/DSCC2014-6022)
- C22. **H. Perez**, S. J. Moura, "Sensitivity-Based Interval PDE Observer for Battery SOC Estimation," *2015 American Control Conference*, Chicago, IL, 2015. **O. Hugo Schuck Best Paper & ACC Best Student Paper Awards**. [10.1109/ACC.2015.7170756](https://doi.org/10.1109/ACC.2015.7170756)
- C23. **C. Le Floch**, F. Di Meglio, S. J. Moura, "Optimal Charging of Vehicle-to-Grid Fleets via PDE Aggregation Techniques," *2015 American Control Conference*, Chicago, IL, 2015. DOI: [10.1109/ACC.2015.7171839](https://doi.org/10.1109/ACC.2015.7171839)
- C24. **C. Sun**, F. Sun., X. Hu, S. J. Moura, "Integrating Traffic Velocity Data into Predictive Energy Management of Plug-in Hybrid Electric Vehicles," *2015 American Control Conference*, Chicago, IL, 2015. DOI: [10.1109/ACC.2015.7171836](https://doi.org/10.1109/ACC.2015.7171836)

- C25. **C. Sun**, F. Sun, S. J. Moura, “Data Enabled Predictive Energy Management of a PV-Battery Smart Home Nanogrid,” *2015 American Control Conference*, Chicago, IL, 2015. DOI: [10.1109/ACC.2015.7170867](https://doi.org/10.1109/ACC.2015.7170867)
- C26. X. Hu, **H. Perez**, S. J. Moura, “Battery Charge Control with an Electro-Thermal-Aging Coupling,” *2015 ASME Dynamic Systems and Control Conference*, Columbus, OH, 2015. **Energy Systems TC Best Paper Award.** [10.1115/DSCC2015-9705](https://doi.org/10.1115/DSCC2015-9705)
- C27. F. Belletti, **C. Le Floch**, S. J. Moura, A. Bayen, “Privacy-preserving dual splitting distributed optimization with Application to load flattening in California,” *54<sup>th</sup> IEEE Conference on Decision and Control*, Osaka, Japan, 2015. DOI: [10.1109/CDC.2015.7402724](https://doi.org/10.1109/CDC.2015.7402724)
- C28. **C. Le Floch**, F. Belletti, S. Saxena, A. Bayen, S. J. Moura, “Distributed Optimal Charging of Electric Vehicles for Demand Response and Load Shaping,” *54<sup>th</sup> IEEE Conference on Decision and Control*, Osaka, Japan, 2015. DOI: [10.1109/CDC.2015.7403254](https://doi.org/10.1109/CDC.2015.7403254)
- C29. S. J. Moura, “Estimation and Control of Battery Electrochemistry Models: A Tutorial,” *54<sup>th</sup> IEEE Conference on Decision and Control*, Osaka, Japan, 2015. DOI: [10.1109/CDC.2015.7402827](https://doi.org/10.1109/CDC.2015.7402827)
- C30. **H. Perez**, X. Hu, S. J. Moura, “Optimal Charging of Batteries via a Single Particle Model with Electrolyte and Thermal Dynamics,” *2016 American Control Conference*, Boston, MA, 2016. DOI: [10.1109/ACC.2016.7525538](https://doi.org/10.1109/ACC.2016.7525538)
- C31. **H. Zhang**, Z. Hu, S. J. Moura, Y. Song, “Coordination of V2G and Distributed Wind Power Using the Storage-like Aggregate PEV Model,” *2016 IEEE PES Innovative Smart Grid Technologies Conference*, Minneapolis, MN, 2016. DOI: [10.1109/ISGT.2016.7781246](https://doi.org/10.1109/ISGT.2016.7781246)
- C32. L. Camacho, M. Krstic, R. Klein, A. Mirtabatabaei, S. J. Moura, “State Estimation for an Electrochemical Model of Multiple-Material Lithium-Ion Batteries”, *2016 ASME Dynamic Systems and Control Conference*, Minneapolis, MN, 2016. DOI: [10.1115/DSCC2016-9877](https://doi.org/10.1115/DSCC2016-9877)
- C33. A.-P. Avrin, S. J. Moura, D. M. Kammen, “Minimizing Cost Uncertainty with a New Methodology for Use In Policy Making: China’s Electricity Pathways,” *2016 IEEE/PES Asia-Pacific Power & Energy Engineering Conference*, Xi’an, China, Oct 2016. **APPEEC Best Student Paper Award.** DOI: [10.1109/APPEEC.2016.7779459](https://doi.org/10.1109/APPEEC.2016.7779459)
- C34. **E. Munsing**, M. Cowell, S. J. Moura, P. Wright, “Optimal Component Sizing for Passive Energy Management in a Two-Reservoir Energy Harvesting Systems,” *PowerMEMS 2016*, Paris, France, 2016. DOI: [10.1088/1742-6596/773/1/012061](https://doi.org/10.1088/1742-6596/773/1/012061)
- C35. S. Dey, **H. E. Perez**, S. J. Moura, “Thermal Fault Diagnostics in Lithium-ion Batteries based on a Distributed Parameter Thermal Model,” *2017 American Control Conference*, Seattle, WA, 2017. DOI: [10.23919/ACC.2017.7962932](https://doi.org/10.23919/ACC.2017.7962932)
- C36. **S. Park**, **D. Zhang**, S. J. Moura, “Hybrid Electrochemical Modeling with Recurrent Neural Networks for Li-ion Batteries,” *2017 American Control Conference*, Seattle, WA, 2017. DOI: [10.23919/ACC.2017.7963533](https://doi.org/10.23919/ACC.2017.7963533)
- C37. **D. Zhang**, **S. Dey**, **H. Perez**, S. J. Moura, “Remaining Useful Life Estimation of Lithium-Ion Batteries based on Thermal Dynamics,” *2017 American Control Conference*, Seattle, WA, 2017. DOI: [10.23919/ACC.2017.7963575](https://doi.org/10.23919/ACC.2017.7963575)
- C38. **H. Zhang**, S. J. Moura, Z. Hu, W. Qi, Y. Song, “Joint PEV Charging Station and Distributed PV Generation Planning,” *IEEE PES General Meeting*, Chicago, IL, 2017. DOI: [10.1109/PESGM.2017.8274111](https://doi.org/10.1109/PESGM.2017.8274111)



- C39. **E. Munsing**, J. Mather, S. J. Moura, “Blockchains for Decentralized Optimization of Energy Resources in Microgrid Networks,” *IEEE Conference on Control Technology and Applications*, Kohala Coast, HI, 2017. DOI: [10.1109/CCTA.2017.8062773](https://doi.org/10.1109/CCTA.2017.8062773)
- C40. **B. Travacca, S. Bae**, J. Wu, S. J. Moura, “Stochastic Day Ahead Load Scheduling for Aggregated Distributed Energy Resources,” *IEEE Conference on Control Technology and Applications*, Kohala Coast, HI, 2017. DOI: [10.1109/CCTA.2017.8062774](https://doi.org/10.1109/CCTA.2017.8062774)
- C41. **E. Burger**, S. J. Moura, “ARX Model of a Residential Heating System with Backpropagation Parameter Estimation Algorithm,” *ASME Dynamic Systems and Control Conference*, Tysons Corner, VA, 2017. DOI: [10.1115/DSCC2017-5315](https://doi.org/10.1115/DSCC2017-5315)
- C42. **E. Burger**, S. J. Moura, “A Stochastic Approach to the Convex Optimization of Non-Convex Discrete Energy Systems,” *ASME Dynamic Systems and Control Conference*, Tysons Corner, VA, 2017. DOI: [10.1115/DSCC2017-5316](https://doi.org/10.1115/DSCC2017-5316)
- C43. X. Shen, S. J. Moura, Q. Guo, H. Sun, W. Xiong, L. Tang, “Optimal Dispatch Model for District Heating Network based on Interior-Point Method,” *IEEE Conference on Energy Internet and Energy System Integration*, Beijing, China, 2017. DOI: [10.1109/EI2.2017.8245628](https://doi.org/10.1109/EI2.2017.8245628)
- C44. **D. Zhang**, S. Dey, S. J. Moura, “Lithium-Ion Battery State Estimation for a Single Particle Model with Intercalation-Induced Stress,” *to appear in 2018 American Control Conference*, Milwaukee, WI, USA, 2018.
- C45. C. Sun, S. J. Moura, “Robust Optimal Eco-driving Control with Uncertain Traffic Signal Timing,” *2018 American Control Conference*, Milwaukee, WI, USA, 2018.
- C46. **S. Bae**, S. M. Han, S. J. Moura, “System Analysis and Optimization of Human-Actuated Dynamical Systems,” *to appear in 2018 American Control Conference*, Milwaukee, WI, USA, 2018.
- C47. **S. Park, D. Kato, Z. Gima**, R. Klein, S. J. Moura, “Optimal Input Design for Parameter Identification in an Electrochemical Li-ion Battery Model,” *to appear in 2018 American Control Conference*, Milwaukee, WI, USA, 2018. **ACC Best Student Paper Finalist.**
- C48. L. Camacho-Solorio, S. J. Moura, M. Krstic, “Boundary Observer Design for Radial Diffusion Equations with Coefficients Depending on the State Spatial Average,” *to appear in 2018 American Control Conference*, Milwaukee, WI, USA, 2018.

#### Articles in Non-Archival Magazines or Journals

- M1. S. J. Moura and **H. Perez**, “Better Batteries through Electrochemistry and Controls,” *ASME Dynamic Systems and Control Magazine*, v 2, n 2, pp. S15-S21, July 2014.

#### Patent

- P1. S. J. Moura, “Design and Control of Electric Vehicle Charging Infrastructure,” *U.S. Provisional Patent 62/609,403* filed December 22, 2017.

## Invited Talks

Total since arriving at UC Berkeley : 44

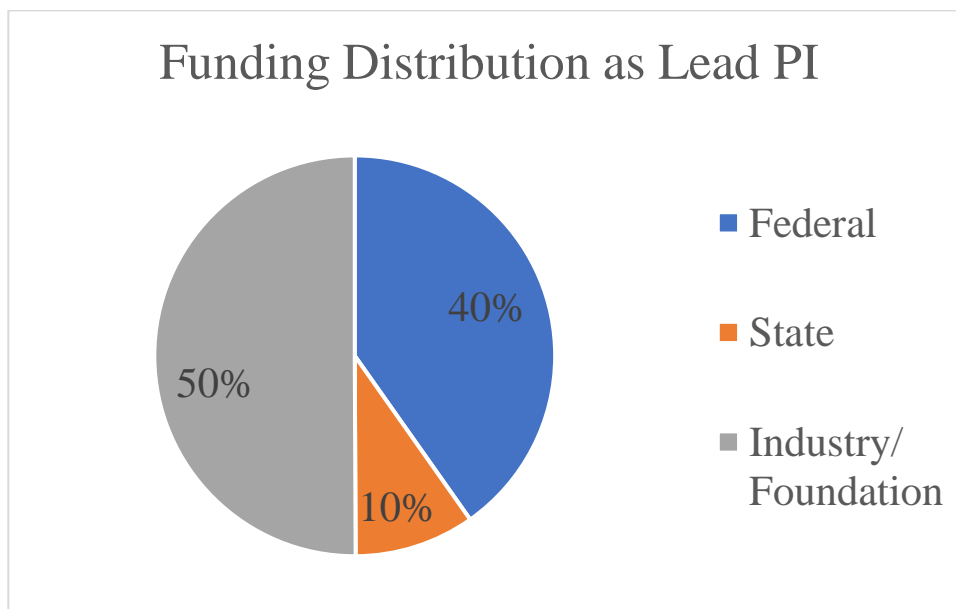
- American Control Conference | TC on Smart Grids June 2018
- University of Washington | Chemical Engineering Dept. Apr 2018
- Rensselaer Polytechnic Institute | Mechanical, Aerospace, Nuclear Eng. Mar 2018
- University of California, Irvine | Mechanical & Aerospace Engineering Feb 2018
- École Polytechnique | Center for Applied Mathematics (CMAP) Jan 2018
- EDF Lab Paris-Saclay Jan 2018
- MINES ParisTech | Centre Automatique et Systèmes (CAS) Jan 2018
- Clemson University | Automotive Engineering Dept. Dec 2017
- NYU Abu Dhabi | Abu Dhabi, United Arab Emirates Nov 2017
- Stanford University | Energy Resources Engineering Dept. Oct 2017
- Carnegie Mellon University | Civil & Environmental Engineering Dept. Sep 2017
- Nuclear Engineering Colloquium | UC Berkeley Sep 2017
- Global Artificial Intelligence and Robotic Summit | Shenzhen, China Jul 2017
- Shanghai Jiaotong University | School of Mechanical Engineering Jun 2017
- Stanford University | Smart Grid Seminar May 2017
- University of Southern California | Electrical Engineering Dept. Mar 2017
- University of Electronics Science & Tech of China (UESTC) | Chengdu, China Jan 2017
- Xihua University | Chengdu, China Jan 2017
- FISITA World Automotive Congress | Busan, South Korea Sep 2016
- Korea Advanced Institute of Science & Tech. (KAIST) | Daejeon, South Korea Sep 2016
- Sogang University | Seoul, South Korea Sep 2016
- Tsinghua-Berkeley Shenzhen Institute | Shenzhen, China Jun 2016
- National University of Singapore | Singapore Apr 2016
- IBM Research Collaboratory | Singapore Apr 2016
- NYU Abu Dhabi | Abu Dhabi, United Arab Emirates Mar 2016
- Center for the Built Environment | UC Berkeley Oct 2015
- NSF Workshop on “Developing Intelligent Food, Energy, and Water Systems” Sep 2015
- Bosch LLC, Research and Technology Center | Palo Alto, CA Jul 2015
- PowerSave Campus Series | UC Berkeley Apr 2015
- Energy Technologies Area | Lawrence Berkeley National Lab Mar 2015
- Energy Resources Group Colloquium | UC Berkeley Mar 2015
- OhmConnect | San Francisco, CA Mar 2015
- Energy Engineering Freshmen Seminar | UC Berkeley Nov 2014
- American Control Conference Tutorial Session on Reference Governors Jun 2014
- Los Alamos National Laboratory May 2014
- Cymer | San Diego, CA May 2014
- NEC Laboratories North America | Cupertino, CA Apr 2014
- Civil & Environmental Engineering Advisory Committee | UC Berkeley Apr 2014
- Environmental Energy Technologies Division | Lawrence Berkeley National Lab Dec 2013
- i<sup>4</sup>Energy | UC Berkeley Nov 2013
- UC Berkeley Institute of Transportation Studies | UC Berkeley Sep 2013
- Zhejiang University | Hangzhou, China Aug 2013
- International Workshop on Smart City | Hangzhou, China Aug 2013

- New Energy Vehicle Dynamic System and Control Workshop | Beijing, China Aug 2013
- Chalmers University of Technology | Gothenburg, Sweden May 2013
- Aalborg University | Aalborg, Denmark May 2013
- MINES ParisTech | Paris, France May 2013
- Carnegie Mellon University Mar 2013
- University of Michigan Feb 2013
- University of California, Davis Feb 2013
- University of California, Berkeley Feb 2013
- University of California, Santa Barbara Jan 2013
- Nest Labs | Palo Alto, CA Jan 2013
- Ohio State University Nov 2012
- University of California, Los Angeles Nov 2012
- ASME Dynamic Systems and Control Conference Semi-Plenary Oct 2012
- University of California, San Diego Oct 2012
- University of Washington Apr 2012
- Princeton University Mar 2012
- Bosch LLC, Research and Technology Center | Palo Alto, CA Jan 2012
- Tesla Motors | Palo Alto, CA Mar 2011
- University of Illinois, Urbana-Champaign Feb 2011
- California Institute of Technology Jan 2011
- Ford Motor Company | Dearborn, MI Dec 2010
- Colorado State University Dec 2010
- Syracuse University Nov 2010

## **Funding**

<b>Funding Agency</b>	<b>Performance Period</b>	<b>My Role</b>	<b>UCB Budget</b>	<b>Project Title</b>
LG Chem	Feb 1, 2018 – Jan 31, 2019	Single PI	\$150,000	Rapid-Safe Battery Charging: Controls & Learning with Electrochemical Models
National Science Foundation	Jan 1, 2018 – Dec 31, 2018	Co-PI Lead PI: N. Sankar (MGL)	\$104,327	STTR: Phase 1: Intelligent Planning & Control Software for EV Charging Infrastructure
Bosch RTC	Jan 1, 2018 – Dec 31, 2018	Single PI	\$114,953	Optimal Experiment Design of Lithium Ion Battery Model Parameter Identification - Year 2
National Science Foundation	Sep 15, 2017 – Aug 31, 2020	Co-PI Lead PI: C. Vermillion (UNNC)	\$235,000	Collaborative Research: Multi-Scale, Multi-Rate Spatio-Temporal Optimal Control with Application to Airborne Wind Energy Systems
National Science Foundation	Aug 15, 2017 – Jul 31, 2020	Team Member	\$828,428	INFEWS/T1: Reducing the Environmental Impacts of FEW Systems In and Around Cities
Advanced Research Projects Agency – Energy (ARPA-E)	Mar 3, 2017 – Mar 2, 2020	Co-PI Lead PI: F. Borrelli	\$3,329,716	Predictive Data-Driven Vehicle Dynamics and Powertrain Control
Total S.A.	Aug 1, 2016 – Jul 31, 2020	Single PI	\$503,000	Optimal Energy Management for Solar Communities
Bosch RTC	Jul 1, 2016 – Jun 30, 2017	Single PI	\$95,252	Optimal Experiment Design of Lithium Ion Battery Model Parameter Identification
California Energy Commission	May 1, 2016 – Mar 1, 2018	Team Member (18 total) Lead PI: D. Kammen	\$1.5M (CEC) \$770K (cost share)	The Oakland EcoBlock - A ZNE, Low Water Use Retrofit Neighborhood Demonstration Project
California Energy Commission	Feb 1, 2016 – Jan 31, 2019	Co-PI Lead PI: T. Lipman	\$1,590,000	An Open Source, Open Architecture Platform for Plug-in Electric Vehicle Smart Charging in California Residential and Commercial Settings
Siebel Energy Institute	Sep 1, 2015 – Feb 28, 2016	Lead PI	\$50,000	Understanding the Impact of Electric Vehicle Charging on the Power Grid: An Urban Mobility Perspective

Siebel Energy Institute	Sep 1, 2015 – Feb 28, 2016	Lead PI	\$25,000	Data-Driven Techniques for Assessing Current and Future Grid Reliability
Jacobs Institute for Design Innovation	Jan 1, 2015 – Dec 31, 2015	Lead PI	\$7,000	CE 186 – Design of Cyber Physical Systems (Course Development)
Samsung Global Research Outreach (GRO)	Aug 13, 2015 – Aug 12, 2016	Single PI	\$100,000	ElectroChemical model-based Control (ECC) of Li-ion Batteries
National Science Foundation	Aug 1, 2014 – July 31, 2017	Single PI	\$294,714	Fast Charging Batteries via Electrochemical Model-based Control
France Berkeley Fund	June 1, 2014 – Nov 30, 2015	Lead PI	\$10,000	Analysis and Control of Grid-Integrated Plug-in Electric Vehicle Fleets
CITRIS Seed Funding	Jun 1, 2014 – Aug 30, 2015	Co-Lead PI w/ J.W. Park (UCD)	\$60,000	Model Predictive Control of PV-ES System utilizing Second Life Lithium Battery
California Energy Commission	May 15, 2013 – Feb 20, 2014	Lead PI	\$95,000	Estimation of Thermostatically Controlled Loads for Demand Response
<b>SUMMARY</b>				
<b>Total as Lead PI</b>	2,093,487 USD			
<b>Total</b>	9,092,390 USD			



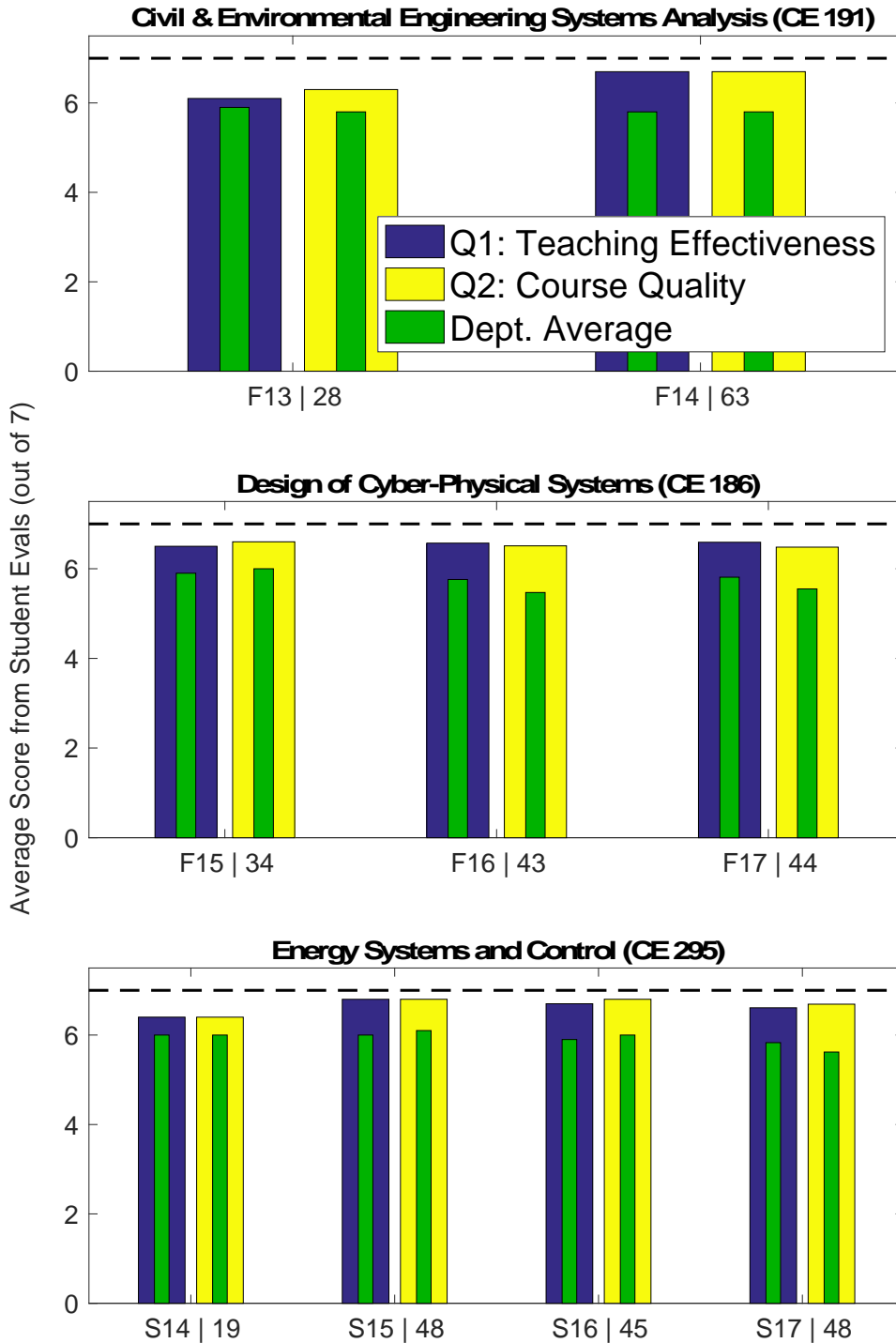


# Teaching

## Courses Taught

- Civil & Environmental Engineering Systems Analysis (CE 191) | F13, F14
- Design of Cyber-Physical Systems (CE 185) | F15, F16, F17
- Energy Systems and Control (CE 295) | S14, S15, S16, S17, S18

## Student Evaluations



## **Student Researcher Mentoring**

### **Ph.D. Student**

- [Eric MUNSING](#)
- [Zach GIMA](#)
- [Laurel DUNN](#)
- [Saehong PARK](#)
- [Dong ZHANG](#)
- [Sangjae BAE](#)
- [Bertrand TRAVACCA](#)

### **Postdoctoral Scholars**

- [Hector PEREZ](#) (UC Berkeley PhD)
- [Hongcai ZHANG](#) (Tsinghua University PhD)
- [Chao SUN](#) (Beijing Institute of Technology PhD)

### **Visiting Ph.D. Student**

- Zhe ZHOU (Tsinghua-Berkeley Shenzhen Institute, China)
- Luis CUOTO (Université Libre de Bruxelles, Belgium)

### **M.S./MEng. Student**

- [Mathilde BADOUAL](#)
- [Ramon CRESPO](#)
- [Carlin LIAO](#)

### **B.S. Student**

- [Dylan KATO](#)
- [Yejin \(Emily\) YOU](#)
- [Teng ZENG](#)
- [Karl WALTER](#)

### **Former Mentees**

#### **Ph.D. Students**

- [Dr. Hector PEREZ](#)
- [Dr. Eric BURGER](#)
- [Dr. Caroline LE FLOCH](#)

#### **Postdoctoral Scholars**

- [Dr. Azad GHAFFARI](#)
- [Dr. Xiaosong HU](#)
- [Dr. Satadru DEY](#)

#### **Visiting Ph.D. Students**

- [Leobardo CAMACHO-SOLORIO](#) (UC San Diego)
- [Hongcai ZHANG](#) (Tsinghua University)

- [Changfu ZOU](#) (University of Melbourne)
- [Chao SUN](#) (Beijing Institute of Technology)

#### **M.S./M.Eng Students**

- [Othmane BENKIRANE](#)
- [Zoltan DeWITT](#)
- [Matt ROESCHKE](#)
- [Tara SCHNEIDER](#)
- [Simon HAN](#)
- [Christopher WIACEK](#)
- [Oren LAVIE](#)

#### **B.S. Students**

- [Yuting \(Tiffany\) WANG](#)
- [Zane LIU](#)
- [Elizabeth CHU](#)
- [Defne GUN](#)
- [Max MORRISON](#)
- [Preet GILL](#)
- [Justin LUKE](#)
- [Othmane BENKIRANE](#)
- [Niloofer SHAMOHAMMAD](#)
- Cindy LI
- [Sam ROUNDS](#)
- [Loan KIM PHAM](#)
- [Victor RUIZ](#)

#### **Visiting Student Researcher (VSR)**

- [Lea NICOLAS](#) (École Polytechnique)
- [Alberto CUCCA](#) (Imperial College London)
- Ibrahim YOUSSEF (American University of Beirut)
- [Khajag GEUKJIAN](#) (American University of Beirut)
- [Stephen MOORE](#) (Imperial College London)
- [Paul-Hervé TAMOKOUE KAMGA](#) (MINES ParisTech)

Summary Statistics

	<i>Currently</i>	<i>Total</i>
<i>PhD</i>	7	10
<i>Postdoc</i>	3	6
<i>Visiting PhD</i>	2	6
<i>MS/MEng</i>	3	10
<i>BS</i>	4	17
<i>VSR</i>	0	6
<i>Women</i>	4	13
<i>URM</i>	1	3

## **Society Memberships**

### **American Society of Mechanical Engineers (ASME)**

- Publicity Chair, Energy Systems Technical Committee, DSCD (2012 – present)
- Student Member, Dynamic Systems and Control Division (DSCD) (2002 – 2011)

### **Institute of Electrical and Electronics Engineers (IEEE)**

- Technical Committee on Smart Cities, CSS (2014 – present)
- Technical Committee on Smart Grids, CSS (2013 – present)
- Technical Committee on Automotive Controls, CSS (2012 – 2014)
- Student Member, Control Systems Society (2008 – present)

### **Society of Hispanic Professional Engineers (SHPE)**

- University of Michigan, Student Chapter (2006 – 2011)
- UC Berkeley Hispanic Engineers & Scientists, Student Chapter (2002 - 2006)
- Administrative Vice-President (2004-2006)

### **Invited/Special/Tutorial Sessions Organized at Conferences**

- “Energy Systems Modeling and Estimation” (Invited Session, ACC14), Organizer
- “Energy Systems Optimization” (Invited, ACC14), Co-Chair
- “Energy Storage in Transportation Applications: Modeling and Identification of Li-ion Batteries” (Invited, DSCC14), Chair
- “Energy Storage: Grid Applications” (Invited, DSCC14), Chair
- “The Future of Battery Controls” (Special, ACC15), Chair
- “Battery Management Systems” (Invited, DSCC15), Chair
- “Battery Modeling for Control and Estimation Problems” (Tutorial, CDC15), Co-Chair
- “Control Strategies for Renewable Energy Integration into the Smart Grid: Wind Applications” (Invited, ACC16), Co-Chair
- “Control Strategies for Renewable Energy Integration into the Smart Grid: Distribution Systems and Microgrids” (Invited, ACC16), Co-Chair
- “Battery and Oil & Gas Systems,” (Invited, DSCC16), Co-Chair
- “Electrochemical Modeling and Diagnostics of Li-ion Batteries” (Invited, ACC17), Co-Chair
- “Estimation and Control of Batteries” (Invited, ACC18), Co-Chair

## **Academic Service**

### *Editorial Boards*

- SAE International Journal of Connected and Automated Vehicles, 2017-2018

### *CEE Department*

- ECIC Admissions Officer, 2015 – 2018
- SYS Admissions Officer, 2017 – 2018
- Faculty Search Committee “Engineering for Sustainability,” 2014 – 2015
- Systems Program Graduate Advisor, 2014 – 2015
- Curriculum Committee, 2013 – 2014
- Equity and Inclusion Committee, 2014 – present

### *College of Engineering*

- Energy Engineering Advisor, 2015 – present
- Tsinghua-Berkeley-Shenzhen Institute (TBSI), 2015 – present
- Center for Access to Engineering Excellence, 2013 – present
- Jacobs Institute for Design Director’s Council, 2016 – present
- ITS Strategic Planning Committee, 2017-2018

### *UC Berkeley Campus*

- Committee on Undergraduate Scholarships, Honors, and Financial Aid, 2014

### *Technical Advisory Boards*

- Committee on Undergraduate Scholarships, Honors, and Financial Aid, 2014

### *Advisory Boards*

- eCalCharge, 2016 – present
- eLum, 2015 – present
- CEC Project: “Demonstration of Community Scale Low Cost Highly Efficient PV and Energy Management System,” lead by UC Davis, 2015 – 2018

### *Reviewer*

- **Funding Agencies:** Advanced Research Projects Agency – Energy (ARPA-E); National Science Foundation (NSF); Croatian Science Foundation (CSF); Nebraska Research Initiative (NRI); Kansas NSF EPSCoR.
- **Publishers:** Springer, Wiley & Sons, Cambridge University Press
- **Journals:** Applied Energy; ASME Journal of Dynamics Systems, Measurement, and Control; Automatica; Electrochimica Acta; Energies; European Journal of Control; Control Engineering Practice; IEEE Transactions on Automatic Control; IEEE Trans. on Control Systems Technology; IEEE Trans. on Industrial Electronics; IEEE Trans. on Intelligent Transportation Systems; IEEE/ASME Trans. on Mechatronics; IEEE Trans. on Power Systems; IEEE Trans. on the Smart Grid; IEEE Trans. on Sustainable Energy; IEEE Trans. on Vehicular Technology; IET Intelligent Transport Systems; International Journal of Control; International Journal of Electrical Power & Energy Systems; International Journal of Powertrains; Journal of the Electrochemical Society; Journal of Energy Storage; Journal of Fluids and Structures; Journal of Power Systems; Journal of Robust & Nonlinear Control; Nature Energy; Proceedings of the IEEE; Proceedings of the National Academy of Sciences; Science Advances; Sensors; Simulation Modeling Practice and Theory; Transportation Research – Parts C & D.

## **Appointments and Experience**

<b>University of California, Berkeley</b> <i>Assistant Professor, Director of eCAL</i>	Jul 2013 – present
<b>MINES ParisTech</b> – Paris, France <i>Visiting Researcher</i>	Mar 2013 – Jun 2013
<b>University of California, San Diego</b> <i>UC President’s Postdoctoral Fellow</i>	Jul 2011 – Jun 2013
<b>University of Michigan</b> – Ann Arbor, Michigan <i>Graduate Student Research Assistant</i>	Aug 2006 – Apr 2011
<b>DaimlerChrysler Corporation</b> – Detroit, Michigan <i>Summer Intern, Electrical Engineering - Vehicle Engineering</i>	May 2006 - Aug 2006
<b>Ford Motor Company</b> - Dearborn, Michigan <i>Summer Intern, Manufacturing &amp; Quality</i>	May 2005 - Aug 2005
<b>Southern California Edison</b> - Rosemead, California <i>Professional Aide, Staff Engineering</i>	Jun 2004 - Aug 2004
<b>BIS Computer Solutions, Inc.</b> - La Crescenta, California <i>Sales Assistant, Computer Technician</i>	Jun 2003 - Jul 2003