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| Scott Moura  Associate Professor | eCAL Director  Clare and Hsieh Wen Shen Endowed Distinguished Professorship  Civil & Environmental Engineering  Chair of Engineering Science  University of California, Berkeley | Office: 625 Davis Hall  University of California, Berkeley  Berkeley, CA USA 94720  Cell: +1 (818) 395-5718  [smoura@berkeley.edu](mailto:smoura@berkeley.edu)  [http://ecal.berkeley.edu](http://faculty.ce.berkeley.edu/moura) |

## 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. Huei 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

**Theory:** Control & estimation, optimization, data science

**Applications:** Batteries; automated, connected & electrified vehicles; clean energy systems

## Awards & Honors

**ASME Dynamic Systems and Control Division Young Investigator Award** (2021)

**UC Berkeley Institute of Transportation Studies Faculty of the Year** (2020)

**NSF CAREER** (2019-2024)

**IFAC Young Author Award Finalist (as advisor, student is Sangjae Bae)** (2018)

2nd IFAC Conference on Cyber-Physical & Human Systems, Miami, FL USA

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

2018 American Control Conference, Milwaukee, WI USA

**Energy Systems Best Paper Award Finalist** (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)

**1st 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**

1st Place Technical Paper Competition

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

2nd Place Poster, Control Systems Session

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

2nd 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 ≥ 6900 | h-index = 40 | i10-index = 87 (*[*Google Scholar*](https://scholar.google.com/citations?hl=en&user=5sLngc0AAAAJ&view_op=list_works&sortby=pubdate)*, October 2021)*

**Bold names** indicate students that I have primarily mentored

**Peer-Reviewed Journals**

1. 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](http://dx.doi.org/10.1016/j.jpowsour.2009.11.026)
2. 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](http://dx.doi.org/10.1016/j.jpowsour.2010.07.001)
3. 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](http://dx.doi.org/10.1109/TCST.2010.2043736)
4. 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](http://dx.doi.org/10.1109/TIE.2010.2087294)
5. 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](http://dx.doi.org/10.1016/j.jpowsour.2011.06.025)
6. 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 LiFePO4 Cell,” *Journal of Power Sources*, v 210, p 263-275, July 2012. DOI: [10.1016/j.jpowsour.2012.03.009](http://dx.doi.org/10.1016/j.jpowsour.2012.03.009)
7. 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](http://dx.doi.org/10.1115/1.4023071)
8. 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](http://dx.doi.org/10.1109/TCST.2012.2189773)
9. 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](http://dx.doi.org/10.1016/j.conengprac.2013.02.009)
10. 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](http://dx.doi.org/10.1115/1.4024801)
11. 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](http://dx.doi.org/10.1080/00207179.2014.915083)
12. **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](http://dx.doi.org/10.1109/TCST.2014.2359176)
13. **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](http://dx.doi.org/10.1109/TCST.2014.2361294)
14. 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](http://dx.doi.org/10.1016/j.jpowsour.2015.01.072)
15. 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](http://dx.doi.org/10.1115/1.4030817).
16. **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](http://dx.doi.org/10.1109/TMECH.2014.2379695)
17. 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](http://dx.doi.org/10.1016/j.apenergy.2015.05.005)
18. **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](http://dx.doi.org/10.1016/j.enbuild.2015.10.019).
19. 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](http://dx.doi.org/10.1109/TCST.2015.2476799).
20. **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](http://dx.doi.org/10.1109/TTE.2016.2531025).
21. **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](http://dx.doi.org/10.1016/j.jpowsour.2016.06.076)
22. 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](http://dx.doi.org/10.1016/j.jpowsour.2016.09.157)
23. **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](http://dx.doi.org/10.1016/j.segan.2016.09.001)
24. 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](http://dx.doi.org/10.1109/TCST.2016.2557221)
25. 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](http://dx.doi.org/10.1109/TCST.2016.2571663)
26. **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](http://dx.doi.org/10.1016/j.epsr.2016.12.001)
27. **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)
28. **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](http://dx.doi.org/10.1109/TVT.2017.2676044)
29. **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](http://dx.doi.org/10.1109/TSG.2016.2556643)
30. 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](http://dx.doi.org/10.1109/TSG.2016.2606442)
31. **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](http://dx.doi.org/10.1149/2.0421807jes)
32. **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](http://dx.doi.org/10.1109/TPWRS.2017.2754940)
33. Y. Xu, S. Colak, E. C. Kara, S. J. Moura, M. Gonzalez, “Planning for Electric Vehicle Needs by Coupling Charging Profiles with Urban Mobility,” *Nature Energy*, v 3, pp. 484-493, Jun 2018. DOI: [10.1038/s41560-018-0136-x](http://dx.doi.org/10.1038/s41560-018-0136-x)
34. **H. Zhang**, S. J. Moura, Z. Hu, Y. Song, “PEV Fast-Charging Station Siting and Sizing on Coupled Transportation and Power Networks,” *IEEE Transactions on Smart Grid*, v9, n 4, pp. 2595-2605, July 2018. DOI: [10.1109/TSG.2016.2614939](http://dx.doi.org/10.1109/TSG.2016.2614939)
35. **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,” *IEEE Transactions on Transportation Electrification*, v4, n 3, pp. 789-803, Sep 2018. DOI: [10.1109/TTE.2018.2847244](http://dx.doi.org/10.1109/TTE.2018.2847244)
36. M. Hao, J. Li, **S. Park**, S. J. Moura, C. Dames, “Efficient thermal management of Li-ion batteries with a passive interfacial thermal regulator based on shape memory alloy,” *Nature Energy*, v3, n10, pp. 899-906, Oct 2018. DOI: [10.1038/s41560-018-0243-8](https://doi.org/10.1038/s41560-018-0243-8). **Nature Energy** [**News & Views**](https://doi.org/10.1038/s41560-018-0265-2)**.**
37. S. Dey, **H. Perez**, S. J. Moura, “Model-based Battery Thermal Fault Diagnostics: Algorithms, Analysis and Experiments,” *IEEE Transactions on Control Systems Technology*, v27, n2, pp. 576-587, Mar 2019. DOI: [10.1109/TCST.2017.2776218](http:/dx.doi.org/10.1109/TCST.2017.2776218)
38. Y. Wang, S. J. Moura, S. Advani, A Prasad, “Power management system for a fuel cell/battery hybrid vehicle incorporating fuel cell and battery degradation,” *International Journal of Hydrogen Energy*, v44, n16, pp. 8479-8492, Mar 2019. DOI: [10.1016/j.ijhydene.2019.02.003](https://doi.org/10.1016/j.ijhydene.2019.02.003)
39. **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,” *IEEE Transactions on Smart Grid*, v10, n3, pp. 2334-2344, May 2019. DOI: [10.1109/TSG.2017.2655461](https://doi.org/10.1109/TSG.2017.2655461)
40. **H. Zhang**, Z. Hu, **E. Munsing**, S. J. Moura, Y. Song, “Data-driven Chance-constrained Regulation Capacity Offering for Distributed Energy Resources,” *IEEE Transactions on Smart Grid*, v10, n3, pp. 2713-2725, May 2019. DOI: [10.1109/TSG.2018.2809046](https://doi.org/10.1109/TSG.2018.2809046)
41. M. Memarzadeh, S. J. Moura, A. Horvath, "Optimizing dynamics of integrated food-energy-water systems under the risk of climate change," *Environmental Research Letters*, v14, n7, pp. 074010, July 2019. DOI: [10.1088/1748-9326/ab2104](https://doi.org/10.1088/1748-9326/ab2104)
42. Y. Wang, S. J. Moura, S. Advani, A Prasad, "Optimization of powerplant component size on board a fuel cell/battery hybrid bus for fuel economy and system durability," *International Journal of Hydrogen Energy*, v44, n33, pp. 18283 – 18292, July 2019.DOI: [10.1016/j.ijhydene.2019.05.160](https://doi.org/10.1016/j.ijhydene.2019.05.160)
43. S. Dey, **H. E. Perez**, S. J. Moura, “Robust Fault Detection of a Class of Uncertain Linear Parabolic PDEs," *Automatica*, v107, n1, pp. 502-510, Sept 2019. DOI: [10.1016/j.automatica.2019.06.014](https://doi.org/10.1016/j.automatica.2019.06.014)
44. H. Zhang, C. Sheppard, T. Lipman, **T. Zeng**, S. J. Moura "Charging Infrastructure Demands of Shared-Use Autonomous Electric Vehicles in Urban Areas," *Transportation Research Part D: Transport and Environment*, v78, pp. 102210, Jan 2020. DOI: [10.1016/j.trd.2019.102210](https://doi.org/10.1016/j.trd.2019.102210)
45. **D. Zhang,** S. Dey, H. E. Perez, S. J. Moura, “Real-Time Capacity Estimation of Lithium-Ion Batteries Utilizing Thermal Dynamics,” *IEEE Transactions on Control Systems Technology*, v28, n3, pp. 992-1000, May 2020. DOI: [10.1109/TCST.2018.2885681](https://doi.org/10.1109/TCST.2018.2885681)
46. **T. Zeng,** H. Zhang, S. J. Moura, “Solving Overstay and Stochasticity in PEV Charging Station Planning with Real Data," *IEEE Transactions on Industrial Informatics*, v16, n5, pp. 3504 – 3514, May 2020*.* DOI: [10.1109/TII.2019.2955997](http://dx.doi.org/10.1109/TII.2019.2955997)
47. C. Sun, J. Guanetti, F. Borrelli, S. J. Moura, “Optimal Eco-Driving Control of Connected and Autonomous Vehicles Through Signalized Intersections,” *IEEE Internet of Things Journal*, v7, n5, pp. 3759-3773, May 2020*.* DOI: [10.1109/JIOT.2020.2968120](http://dx.doi.org/10.1109/JIOT.2020.2968120)
48. **D. Zhang**, S. Dey, L. Couto, S. J. Moura, “Battery Adaptive Observer for a Single Particle Model with Intercalation-Induced Stress,” *IEEE Transactions on Control Systems Technology*, v28, n4, pp. 1363-1377, July 2020. DOI: [10.1109/TCST.2019.2910797](https://doi.org/10.1109/TCST.2019.2910797)
49. M. Memarzadeh, S. J. Moura, A. Horvath, "Multi-agent management of integrated food-energy-water systems using stochastic games: from Nash equilibrium to the social optimum," *Environmental Research Letters*, v15, n9, pp. 0940a4, Sep 2020*.* DOI: [10.1088/1748-9326/abadca](https://doi.org/10.1088/1748-9326/abadca)
50. H. Zhang, C. J. R. Sheppard, T. E. Lipman, S. J. Moura, "Joint Fleet Sizing and Charging System Planning for Autonomous Electric Vehicles," *IEEE Transactions on Intelligent Transportation Systems*, v21, n11, pp. 4725-4738, Nov 2020*.* DOI: [10.1109/TITS.2019.2946152](https://doi.org/10.1109/TITS.2019.2946152)
51. A. Halder, K. Caluya, **B. Travacca**, S. J. Moura, "Hopfield Neural Network Flow: A Geometric Viewpoint," *IEEE Transactions on Neural Networks and Learning Systems*, v31, n11, pp 4869-4880, Nov 2020*.* [arXiv](https://arxiv.org/abs/1908.01270). DOI: [10.1109/TNNLS.2019.2958556](http://dx.doi.org/10.1109/TNNLS.2019.2958556)
52. **L. N. Dunn, I. Kavvada, M. D. Badoual**, and S. J. Moura, "Bayesian Hierarchical Methods for Modeling Electrical Grid Component Failures," *Electrical Power Systems Research*, v189, pp. 106789, December 2020*.* DOI: [10.1016/j.epsr.2020.106789](https://doi.org/10.1016/j.epsr.2020.106789)
53. D. Zhang, L. D. Couto, S. J. Moura, “Electrode-Level State Estimation in Lithium-ion Batteries via Kalman Decomposition,” *IEEE Control Systems Letters*, v5, n5, pp. 1657-1662, Nov 2021. DOI: [10.1109/LCSYS.2020.3042751](https://doi.org/10.1109/LCSYS.2020.3042751)
54. **Z. Zhou**, S. J. Moura, H. Zhang, X. Zhang, Q. Guo, H. Sun, "Power-Traffic Network Equilibrium Incorporating Behavioral Theory: A Potential Game Perspective," *Applied Energy*, v289, pp. 116703, May 2021. DOI: [10.1016/j.apenergy.2021.116703](https://doi.org/10.1016/j.apenergy.2021.116703)
55. S. Woo, S. Bae, S. J. Moura, “Pareto Optimality in Cost and Service Quality for an Electric Vehicle Charging Facility,” *Applied Energy*, v 290, pp. 116779, May 2021. DOI: [10.1016/j.apenergy.2021.116779](https://doi.org/10.1016/j.apenergy.2021.116779).
56. T. Zeng, S. Bae, B. Travacca, S. J. Moura, “Inducing Human Behavior to Maximize Operation Performance at PEV Charging Station,” *IEEE Transactions on Smart Grid*, v12, n4, pp. 3353-3363, July 2021. DOI: [10.1109/TSG.2021.3066998](https://doi.org/10.1109/TSG.2021.3066998)
57. D. Zhang, L. D. Couto, P. Gill, S. Benjamin, W. Zeng, S. J. Moura, “Thermal Enhanced Adaptive Interval Estimation in Battery Packs with Heterogeneous Cells,” *to appear in IEEE Transactions to Control Systems Technology*. DOI: [10.1109/TCST.2021.3091108](http://dx.doi.org/10.1109/TCST.2021.3091108)
58. **D. Zhang**, S. Dey, S. Tang, R. Drummond, S. J. Moura, “Battery Temperature Estimation with an Uncertain Semilinear Thermal PDE Model,” *Automatica*, v133, pp. 109849, Nov 2021. DOI: [10.1016/j.automatica.2021.109849](https://doi.org/10.1016/j.automatica.2021.109849)
59. H. Yu, **S. Park**, A. M. Bayen, S. J. Moura, M. Krstic, “Reinforcement Learning versus PDE Backstepping and PI Control for Congested Freeway Traffic,” *to appear in IEEE Transactions on Control Systems Technology*. DOI: [10.1109/TCST.2021.3116796](http://dx.doi.org/10.1109/TCST.2021.3116796)
60. L. D. Couto, R. Romagnoli, S. Park, D. Zhang, S. J. Moura, M. Kinnaert, E. Garone, “Faster and Healthier Charging of Lithium-Ion Batteries via Constrained Feedback Control,” *provisional acceptance to IEEE Transactions on Control Systems Technology*.
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6. E. Munsing, “Optimization Tools for Constrained Energy Markets,” Ph.D. Thesis, Dept of Civil & Environmental Engineering, University of California, Berkeley, 2018.
7. Z. T. Gima, “Parameter Estimation in Electrochemical Li-ion Battery Models,” Ph.D. Thesis, Dept of Civil & Environmental Engineering, University of California, Berkeley, 2020.
8. D. Zhang, “Model-based Online State and Parameter Estimation for Lithium-ion Battery Management Systems,” Ph.D. Thesis, Dept of Civil & Environmental Engineering, University of California, Berkeley, 2020.
9. L. N. Dunn, “Data-Driven Decision Analysis in Electric Power Systems,” Ph.D. Thesis, Dept of Civil & Environmental Engineering, University of California, Berkeley, 2020.
10. S. Park, “Techniques for Battery Management: Modeling, Estimation, Learning & Controls,” Ph.D. Thesis, Dept of Civil & Environmental Engineering, University of California, Berkeley, 2020.
11. S. Bae, “Optimization and Control in Smart Cities: Mobility, Electrification, and Behavior,” Ph.D. Thesis, Dept of Civil & Environmental Engineering, University of California, Berkeley, 2020.

**Invited Talks**

*Total since arriving at UC Berkeley : >90 in total*

* C3.ai DTI | ML for a Resilient, Secure, Carbon-Free Electricity Supply Jun 2021
* Princeton-UCSB Workshop on Modern Power Grids Jun 2021
* Penn State Energy Days 2021 May 2021
* Apple Apr 2021
* MIT | Pierce Laboratory for Infrastructure Science and Engineering Mar 2021
* 2020 Virtual INFORMS Annual Meeting Nov 2020
* University of Colorado, Boulder | Renewable and Sustainable Energy Institute Nov 2020
* NextProf Nexus 2020 | Virtual Sep 2020
* General Motors Sep 2020
* Columbia University | Columbia Electrochemical Energy Center July 2020
* Oxford Battery Modeling Symposium (Virtual Conference due to COVID) March 2020
* West Bengal Transport Corporation, Kolkata, India | Workshop on Electric Mobility March 2020
* Gordon Research Conference: Batteries Feb 2020
* UCLA | MAE Seminar Dec 2019
* IEEE Conf. on Decision & Control | Workshop on Smart Society & CPHS Dec 2019
* NextProf Nexus | Georgia Tech Oct 2019
* Georgia Tech | Decision and Control Laboratory Seminar Oct 2019
* University of California, Davis | MAE Seminar May 2019
* University of California, Santa Cruz | Cyber-Physical Systems Research Center Jan 2019
* Stem Inc. Jan 2019
* LANL Grid Science Winter School & Conference | TC on Smart Grids Jan 2019
* "Smart Buildings: A Status Quo Check" Workshop | IEEE CDC Dec 2018
* IEEE Conference on Decision and Control | TC on Smart Grids Dec 2018
* Université Libre de Bruxelles (ULB) Dec 2018
* Americas International Meeting on Electrochemistry and Solid State Science Oct 2018
* ASME Dynamic Systems and Control Conf | Workshop on CAVs Oct 2018
* University of Michigan, Ann Arbor Sep 2018
* École Polytechnique | Center for Applied Mathematics (CMAP) Sep 2018
* Université Libre de Bruxelles (ULB) Sep 2018
* University of Oxford | Dept. of Engineering Science June 2018
* University of Warwick | Institute of Mathematics & Warwick Manufacturing Group 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
* Institut Henri Poincaré | The Mathematics of Energy 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
* Energy Technologies Area | Lawrence Berkeley National Lab Mar 2015
* Energy Resources Group Colloquium | UC Berkeley Mar 2015
* OhmConnect | San Francisco, CA Mar 2015
* 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
* Environmental Energy Technologies Division | Lawrence Berkeley National Lab Dec 2013
* i4Energy | 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 (\*last updated in Fall 2020)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Funding Agency** | **Performance Period** | **My Role** | **UCB Budget** | **Project Title** |
| Tsinghua University Education Foundation | Aug 1, 2018 – Jul 31 2020 | Core PI | $73,333 | Tsinghua-Berkeley Shenzhen Institute – Year 3 |
| CITRIS COVID | May 15 2020 - May 14 2021 | Lead PI  Co-PI: Raja Sengupta | $50,000 | A Data Scientific Approach to Coronavirus Surveillance: Application to Re-Opening UC Campuses |
| National Science Foundation | Apr 15 2020 – Apr 14 2022 | Co-PI | $104,940 | SBIR Phase II: Intelligent Planning and Control Software for EV Charging Infrastructure |
| Total S.A. / Saft Batteries | May 15 2020 - May 14 2021 | Single PI | $144,875 | State-of-X Estimation in Battery Packs with Heterogeneous Cells |
| Total S.A. | Jan 6 2020 – Jan 29 2021 | Single PI | $251,410 | Design of EV Fleets and Charging Infrastructure |
| Enel X North America | Unrestricted gift | Single PI | $10,000 | In support of CE 295 |
| Allison Transmission | Unrestricted gift | Single PI | $10,000 | In support of CE 295 |
| Leslee & Michael Perlstein | Unrestricted gift | Single PI | $7,250 | In support of CE 186 |
| Enel Foundation via CITRIS | Sep 30, 2019 – Sep 29, 2020 | Single PI | $50,000 | Tools for Electric Bus Planning & Operation |
| Total S.A. / Saft Batteries | May 15 2019 – Apr 30 2020 | Single PI | $130,400 | State‐of‐Charge / State‐of‐Health Estimation in Battery Packs with Heterogeneous Cells |
| CITRIS Seed Funding | May 1, 2019 – June 30, 2020 | Co-Lead PI  Lead PI:  Yu Zhang (UCSC) | $30,000 | Multi-Hazard Risk Analysis to Inform Distribution Grid Upgrades for Reliability and Resilience |
| National Science Foundation | Mar 1, 2019 – Feb 29, 2024 | Single PI | $531,177 | CAREER: Estimation and Control of Electrochemical-Thermal Battery Models: Theory and Experiments |
| Leslee & Michael Perlstein | Unrestricted gift | Single PI | $5,000 | In support of CE 186 |
| Total S.A. | Aug 1, 2018 – July 31, 2020 | Single PI | $299,814 | Research in the Field of Electric Vehicle Charging Stations |
| Tsinghua University Education Foundation | Aug 1, 2018 – Jul 31 2019 | Core PI | $66,666 | Tsinghua-Berkeley Shenzhen Institute – Year 3 |
| 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) | $30,000 | 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 |
| **SUMMARY** | | | | |
| **Total as Lead PI** | 3,094,845 USD | | | |
| **Total** | 11,697,255 USD | $1.67M per year (CEE is 782k per FTE) | | | |



## Teaching (\*last updated in Fall 2020)

**Courses Taught at UC Berkeley during Academic Year**

* Civil & Environmental Engineering Systems Analysis (CE 191) | F13, F14
* Design of Cyber-Physical Systems (CE 185) | F15, F16, F17, F18, F19
* Energy Systems and Control (CE 295) | S14, S15, S16, S17, S18, S19, S20

**UCB Student Course Evaluation Survey Results (Average Scores over 14 semesters)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | My Score (out of 7) | Dept. Avg. (out of 7) |  |
| Teaching Effectiveness | 6.528 | 5.932 | +10% from dept. avg |
| Course Quality | 6.488 | 5.778 | +12% from dept. avg |
| Enrollment | 46.21 |  |  |

## 

**Summer Courses & Enrollment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Course (Program)* | *2016* | *2017* | *2018* | *2019* | *2020* |
| Renewable Energy Systems and Control (TBSI) | 8 | 12 | 7 |  |  |
| Intro to Reinforcement Learning (TBSI) |  |  |  | 6 | TBD |
| Maker Design Studio (PREP/TPREP) |  | 60 | 120 | 120 | 180 |

## Student Researcher Mentoring

*Hyperlinks connect to LinkedIn accounts*

**Ph.D. Student**

* [Bertrand TRAVACCA](https://fr.linkedin.com/in/bertrand-travacca-9ab96045/en)
* [Soomin Woo](https://www.linkedin.com/in/soomin-woo-3488a577/)
* [Mathilde BADOUAL](https://www.linkedin.com/in/mathildebadoual/)
* [Teng ZENG](https://www.linkedin.com/in/teng-janton-zeng-989194107/)
* [Dylan KATO](https://www.linkedin.com/in/dylan-kato-2a344a84/)
* [Aaron Kandel](https://www.linkedin.com/in/aaron-kandel/)
* [Patrick Keyantuo](https://www.linkedin.com/in/patrick-keyantuo-1a44a1182/)
* [Ioanna Kavvada](https://www.linkedin.com/in/ioanna-kavvada-03a94b159/)
* [Hassan OBEID](https://www.linkedin.com/in/hassan-obeid/)
* [Guillaume GOUJARD](https://www.linkedin.com/in/guillaume-goujard-245810151/)
* [Preet GILL](https://www.linkedin.com/in/preet-gill-14916b117/)
* [Chitra DANGWAL](https://www.linkedin.com/in/chitra-dangwal-4304a5101/)
* [Callie CLARK](https://www.linkedin.com/in/callie-clark/)

**Postdoctoral Scholars**

* [Saehong PARK](https://www.linkedin.com/in/saehong-park-42a759b8/)
* [Zhijia Huang](https://www.linkedin.com/in/zhijia-huang-b630b21b8/)

**Visiting Ph.D. Student**

* None currently due to COVID

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

* Deep Dayaramani
* German Perez Lopez

**B.S. Student**

* Akshat Jain
* Kai Jin

**Former PhD and Postdoc Mentees**

**Ph.D. Students**

* [Dr. Hector PEREZ](https://www.linkedin.com/in/hperez27/)
* [Dr. Eric BURGER](https://www.linkedin.com/in/ericmichaelburger/)
* [Dr. Caroline LE FLOCH](https://www.linkedin.com/in/caroline-le-floch/)
* [Dr. Eric MUNSING](https://www.linkedin.com/in/emunsing/)
* Dr. Hongcai ZHANG
* Dr. [Zach GIMA](https://www.linkedin.com/in/zacharygima/)
* Dr. [Laurel DUNN](https://www.linkedin.com/in/laurel-dunn-820373a7/)
* Dr. [Dong ZHANG](https://www.linkedin.com/in/dong-zhang-9752629a)
* Dr. [Sangjae BAE](https://www.linkedin.com/in/sangjae-bae-15378594/)
* Dr. [Saehong PARK](file:////Users/scottmoura/Documents/Jobs/CV/•%2509Saehong%20PARK)
* Dr. [Yiqi Zhao](https://www.linkedin.com/in/%E6%87%BF%E7%A5%BA-%E8%B5%B5-08731ab3/)

**Postdoctoral Scholars**

* [Dr. Azad GHAFFARI](https://www.linkedin.com/in/azad-ghaffari) (UC San Diego, PhD)
* [Dr. Xiaosong HU](https://cn.linkedin.com/in/huxiaosong) (Beijing Institute of Tech. PhD)
* [Dr. Satadru DEY](http://www.ucdenver.edu/faculty-staff/SDey/Pages/default.aspx) (Clemson University, PhD)
* [Dr. Chao SUN](https://www.linkedin.com/in/chao-sun-7b552b6a/) (Beijing Institute of Tech. PhD)
* Dr. [Hector PEREZ](https://scholar.google.com/citations?user=vzn5WwwAAAAJ&hl=en) (UC Berkeley PhD)
* Dr. [Hongcai ZHANG](https://cn.linkedin.com/in/zhang-%E5%BC%A0-hongcai-%E6%B4%AA%E8%B4%A2-2bba6336) (Tsinghua University PhD)
* Dr. [Milad Memarzadeh](https://www.linkedin.com/in/milad-memarzadeh-45a82827/) (Carnegie Mellon Univ. PhD)

**NOTE: Full History of Mentees, including Visiting Scholars, MS/MEng, and BS is available upon request.**

Summary Statistics

|  |  |  |
| --- | --- | --- |
|  | **Currently** | **Total** |
| *PhD* | 13 | 24 |
| *Postdoc* | 2 | 9 |
| *Visiting PhD* | 0 | 16 |
| *MS/MEng* | 8 | 19 |
| *BS* | 5 | 23 |
| *TOTAL* | 28 | 91 |
| *Women* | 13 | 25 |
| *URM* | 5 | 13 |

## Society Memberships

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

Energy Systems Technical Committee, DSCD (2012 – present)

Chair (2020 – present)

Vice-Char (2018 – 2020)

Secretary (2016-2018)

Publicity (2014-2016)

Member (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)

**Conference Committee Service**

* Program Committee, 2014 American Control Conference in Portland, OR USA
* Program Committee, 2017 ACM BuildSys in Delft, Netherlands
* Program Committee, 2020 American Control Conference in Denver, CO USA

**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
* “Control, Optimization, and Diagnostics of Energy Storage Systems” (Invited, ACC19), Co-Chair
* “Estimation and Identification of Energy Storage Systems” (Invited, ACC19), Co-Chair
* “A Tutorial on Battery Systems and Control” (Tutorial, ACC19), Co-Chair
* “Renewable and Smart Energy Systems” (Invited, DSCC19), Co-Chair
* “Modeling and Identification of Energy Storage Systems” (Invited, ACC20), Co-Chair
* “Estimation and Diagnostics of Batteries” (Invited, ACC20), Co-Chair
* “Control and Estimation of Batteries” (Invited, ACC20), Co-Chair
* “Autonomous Energy Systems: Estimation, Modeling, and Control” (Invited, ACC20), Co-Chair

## Academic Service

## Editorial Boards

* ASME Journal of Dynamical Systems Measurement and Control, 2019-present
* SAE International Journal of Connected and Automated Vehicles, 2017-2018

## CEE Department

* Strategic Planning Committee, 2019 – 2020
* Faculty Search Committee “Future Infrastructure Systems,” 2018 - 2019
* 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 Innovation 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

* Enviome Research Pvt Ltd, 2020 – present
* Zitara, 2020 – present
* Microgrid Labs, 2018 - present
* 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:** 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

**University of California, Berkeley**

*Chair of Engineering Science* Jul 2021 - present

*Clare and Hsieh Wen Shen Endowed Distinguished Professorship* Jul 2020 – Jun 2025

*Associate Professor, Director of eCAL* Jul 2019 – present

*Assistant Professor, Director of eCAL* Jul 2013 – Jun 2019

**MINES ParisTech** – Paris, France Mar 2013 – Jun 2013

*Visiting Researcher*

**University of California, San Diego** Jul 2011 – Jun 2013

*UC President’s Postdoctoral Fellow*

**University of Michigan** – Ann Arbor, Michigan Aug 2006 – Apr 2011

*Graduate Student Research Assistant*     
  
**DaimlerChrysler Corporation** – Detroit, Michigan May 2006 - Aug 2006

*Summer Intern, Electrical Engineering - Vehicle Engineering*

**Ford Motor Company** - Dearborn, Michigan May 2005 - Aug 2005

*Summer Intern, Manufacturing & Quality*

**Southern California Edison** - Rosemead, California Jun 2004 - Aug 2004

*Professional Aide, Staff Engineering*  

**BIS Computer Solutions, Inc.** - La Crescenta, California Jun 2003 - Jul 2003

*Sales Assistant, Computer Technician*