

Teng (Janton) Zeng

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- *In summary: I work in the joint field of transportation electrification and smart grid with optimization and learning techniques as my hammer. My goal is to contribute to the societal green energy revolution and transformation.*

EDUCATION

University of California, Berkeley, Berkeley, CA

Ph.D. in Systems Engineering with optimization and control minor

Planned 2022

University of California, Berkeley, Berkeley, CA

M.S. in System Engineering

May 2019

University of California, Berkeley, Berkeley, CA

B.S. in Energy Engineering major

August 2014 – May 2018

Familiar with:

- Python, MATLAB, PostgreSQL, Java, Js, Arduino, CSS, R, Scheme, C++ (basic)
- Data mining, linear/nonlinear control, machine learning, optimization, reinforcement learning

PROFESSIONAL EXPERIENCE

Tesla, Palo Alto, CA

Data Scientist Intern - Charging Data and Modeling (CDM) team

June – August 2021, January – May 2022

- Our team manages the entire charging network across the world. We build and maintain the entire data pipeline, consume data for modeling and analysis.

Energy, Controls, & Applications Lab (eCAL), Berkeley, CA

Undergrad Student Researcher – supervised by Prof. Scott Moura

May 2017 – August 2018

Graduate Student Researcher – supervised by Prof. Scott Moura

August 2018 - present

- Research topic (*lead researcher, ^contributor):

1. ^Optimal Operation with Robo-chargers in Plug-in Electric Vehicle Charging Stations (2022-)
 - a. keywords: robo-charger, mixed integer linear programming(on-going)
2. ^Connected and Learning Based Optimal Freight Management for Efficiency (2021-)
 - a. keywords: learning, data-driven distributionally robust, energy consumption model (on-going)
3. *Joint design of electric freight fleet and charging infrastructure network incorporating urban mobility and energy system (2020-)
 - a. keywords: Stackelberg game, column generation, vehicle routing problem, network modeling, infrastructure planning (on-going)
4. *Autonomous electric vehicle (AEV) fleet sizing and charging infrastructure planning (2019-)
 - a. keywords: agent-based simulation, bipartite graph, minimum path cover problem (on-going)
 - b. ^Department of Energy (DOE) SMART Mobility [Advanced Fueling Infrastructure Capstone Report](#)
5. *Optimal operation with human decision modeling at PEV charging station (2019-)
 - a. keywords: discrete choice modeling, multi-convex, block coordinate descent, MPC
 - b. *Electricity market participation (on-going).
6. *Optimal planning for plug-in electric vehicle (PEV) charging station (2018-2019)
 - a. keywords: overstay, chance-constraint programming
7. *PEV charging station load profile forecasting (2017, undergraduate)
 - Applied machine learning algorithms for station short-term load forecasting.
 - Data mining 86,000+ chargers' daily utilization data, including time, duration, price, power, etc. (80+ features). 10 slave-systems, one master with PostgreSQL database.

TSVC Capital, Los Altos, CA

Investment Intern – Mentored by Founding Partner Dr. Chun Xia

September 2021 – December 2021

- Deal sourcing, discussion, diligence; Investment summary and marketing blogs write up.

Lawrence Berkeley National Laboratory (LBNL), Grid Integration Group, Berkeley, CA

Student Research Assistant

August 2015 - May 2017

- Project topic: Plug-in hybrid electric vehicles lithium-ion battery degradation model written in Python scripts as an extended module to V2G-Simulator (funded by DOE Vehicle Technologies Office, R&D Magazine: *R&D100 awards* recipients).

Technische Universität München (TUM)-CREATE, RP 8 – Energy Management, Singapore

Student Research Assistant

May 2016 – August 2016

- Developed MySQL database for Nanyang Technological University (NTU) buses energy consumption data storage and bridged communication between MATLAB and MySQL.
- Nanyang Technological University campus buses energy consumption analysis, identified trends and patterns in each NTU buses, and sought potential improvements to prevent buses from overloading.

LEADERSHIP EXPERIENCE

Smart Learning Pilot for Electric Vehicle Charging Stations (SlrpEV), Berkeley, CA

Algorithm and Backend Team Leader

Feb 2020 - present

- Oversee and closely work (“Sprint” process) with 7 developers for project software backend design and development, including server, API and database setup, pricing optimization scheme and charging control algorithm design.
- Prototype uniquely designed price-differentiated charging station services at UCSD and UC Berkeley campuses. Weekly report to Smart Energy & Digital Lab at Total S.E. (project sponsor).
- CITRIS and the Banatao Institute Sustainable Infrastructures research testbed for EV research.
- Lead electricity market participation research.

Association of Chinese Entrepreneurs (ACE), Berkeley, CA

Core Member

September 2018 – 2021

JOURNAL PUBLICATIONS

1. Zhao, Yiqi*, **Teng Zeng***^, Zaid Allybokus, Ye Guo, and Scott Moura. “*Joint Design for Electric Fleet Operator and Charging Service Provider: Understanding the Non-Cooperative Nature.*” accepted to and early access on IEEE Transactions on Intelligent Transportation Systems. (*equal, ^corresponding author)
2. **Zeng, Teng***, Sangjae Bae*, Bertrand Travacca, and Scott Moura. “Inducing Human Behavior to Maximize Operation Performance at PEV Charging Station.” *IEEE Transactions on Smart Grid* 12, no.4 (2021):3353-3363.
3. **Zeng, Teng**, Hongcai Zhang, and Scott Moura. “Solving Overstay and Stochasticity in PEV Charging Station Planning with Real Data.” *IEEE Transactions on Industrial Informatics* 16, no. 5 (2019): 3504-3514.
4. Zhang, Hongcai, Colin JR Sheppard, Timothy E. Lipman, **Teng Zeng**, and Scott J. Moura. “Charging Infrastructure Demands of Shared-use Autonomous Electric Vehicles in Urban Areas.” *Transportation Research Part D: Transport and Environment* 78 (2020): 102210.
5. Smart, John, Bi, Zicheng, Birky, Alicia, Borlaug, Brennan, Burrell, Erin, Koutou, Eleftheria, Lee, Dong-Yeon, Lipman, Timothy, Meintz, Andrew, Miller, Eric, Mohamed, Ahmed, Moniot, Matthew, Moore, Amy, Motoaki, Yutaka, Needell, Zachary, Onar, Omer, Rames, Clement, Reincke, Nicholas, Roni, Mohammad, Salisbury, Shawn, Sheppard, Colin, Toba, Danho Ange Lionel, Walker, Victor, Weigl, Dustin, Wood, Eric, Xie, Fei, Yi, Yonggen, **Zeng, Teng**, Zhang, Hongcai, Zhou, Yan, and Zhou, Zhi. 2020. "SMART Mobility. Advanced Fueling Infrastructure Capstone Report". United

States. <https://doi.org/10.2172/1656701>. <https://www.osti.gov/servlets/purl/1656701>.

6. Wang, Dai, Jonathan Coignard, **Teng Zeng**, Cong Zhang, and Samveg Saxena. “Quantifying Electric Vehicle Battery Degradation from Driving vs. Vehicle-to-Grid Services.” *Journal of Power Sources* 332 (2016): 193-203.
7. **Zeng, Teng**, Hongcai Zhang, Max Zuo-Jun Shen, Scott Moura. “Enhancing the Environmental and Economic Benefits of Automated Electric Vehicle Ride-Hailing Fleets in New York City.” *completed 1st round revision at Nature Communications*.
8. Obeida, Hassan*, Ayse Tugba Ozturka*, **Teng Zeng***, Sangjae Bae, Wenten Zeng, and Scott J. Moura. “Electric Vehicle Drivers Charging Preferences with Price Variations at Workplace Charging Stations.” *submitted to Nature Scientific Data*. (*equal, ^corresponding author)
9. Ozturka, Ayse Tugba, Hassan Obeida, **Teng Zeng**, Wenten Zeng, and Scott J. Moura. “Joint Price and Power Optimization for Workplace Charging Stations.” *submitted to IEEE Transactions on Smart Grid*.
10. Yi, Ju, **Teng Zeng**, Zaid Allybokus, and Scott Moura “Optimal Planning and Operation with Robo-chargers in Plug-in Electric Vehicle Charging Stations.” *submitted to IEEE Transactions on Smart Grid*.

CONFERENCE PUBLICATIONS

1. Bae, Sangjae, **Teng Zeng**, Bertrand Travacca, and Scott Moura. "Inducing Human Behavior to Alleviate Overstay at PEV Charging Station." In *2020 American Control Conference (ACC) invited session – Smart Grid*, pp. 2388-2394. IEEE, 2020.
2. **Zeng, Teng**, Scott Moura, Xue Li, Zhe Zhou. “Distributed Fleet Management for Shared Electric Vehicles in Coupled Power and Transportation Networks.” *submitted to IFAC World Congress 2023*.
3. Wang, Ruiting, **Teng Zeng***, Patrick Keyantuo, Jairo Sandoval, Aashrith Vishwanath, Hoseinali Borhan, and Scott Moura. “Optimal Dispatch & Routing of Heavy-Duty Electric Trucks - A Sensitivity Analysis with Fleet Data.” *submitted to 2023 American Control Conference (ACC) invited session*. (^corresponding author)
4. Ju, Yi, **Teng Zeng**, Zaid Allybokus, and Scott Moura “Optimal Operation with Robo-chargers in Plug-in Electric Vehicle Charging Stations.” *submitted to 2023 American Control Conference (ACC) invited session*.
5. Keyantuo, Patrick, Ruiting Wang, **Teng Zeng**, and Scott Moura. “Robust and Data-Driven Solutions to Electric Truck Routing Problems.” *submitted to IFAC World Congress 2023*

JOURNAL REFEREE

- **IEEE (5)**: IEEE Transactions on Smart Grid; IEEE Transactions on Power Systems; IEEE Transactions on Industrial Informatics; IEEE Transactions on Transportation Electrification; IEEE Transactions on Intelligent Transportation Systems.
- **IET (2)**: IET Smart Grid; IET Electrical Systems in Transportation.
- **Conferences (5)**: IEEE PES Power & Energy Society General Meeting (PES-GM); ASME Dynamic Systems and Control (DSC) Conference; American Control Conference (ACC); IEEE Conference on Control Technology and Applications (CCTA); IEEE Conference on Decision and Control (CDC).

INVENTIONS

- 2 U.S. patents filed. 1 more on the way.