KIMBERLY J. CHAN

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Berkeley, California

EDUCATION

University of California, Berkeley August 2019 – Present
Expected Ph.D. in Chemical & Biomolecular Engineering Berkeley, CA
Overall GPA: 3.89/4.0 *Credits Earned:* 72 Semester Hours
Additional coursework listed under Technical Strengths

Georgia Institute of Technology August 2014 – May 2018
B.S. in Chemical & Biomolecular Engineering *with Highest Honors* Atlanta, GA
Minor in Scientific & Engineering Computing (SEC) *coursework listed under Technical Strengths*
Member of Omega Chi Epsilon
Faculty Honors (2014-2017), Dean's List (2017-2018)
Overall GPA: 3.79/4.0 *Credits Earned:* 134 Semester Hours

RESEARCH EXPERIENCE

University of California, Berkeley January 2020 – Present
Graduate Research Assistant (40 hrs/week) — Prof. Ali Mesbah *Berkeley, CA*

- Research in machine learning methods for optimal control and statistical forecasting for cold atmospheric plasmas in biomedical applications
- Co-developed a correction strategy for deep neural network-based controllers in complex, nonlinear systems on embedded hardware, resulting in Publication 1
- Created an end-to-end framework for optimal hyperparameter search for embedded learning-based control using multi-objective Bayesian optimization, resulting in Publication 5
- Continuing work on personalizing plasma treatments using transfer learning and active learning paradigms (combining reinforcement learning and Bayesian optimization), resulting in Publication 6

Georgia Institute of Technology January 2017 – May 2018
Undergraduate Research Assistant (9 hrs/week) — Prof. Martin Maldovan *Atlanta, GA*

- Simulated experimental models using COMSOL Multiphysics Software to observe transport properties of fluids in porous and reacting media
- Participated in discussion of theoretical applications of metamaterials and nanoscale thermal transport properties

TEACHING EXPERIENCE

University of California, Berkeley - College of Chemistry Spring 2021, Spring 2022
Graduate Student Instructor (20 hrs/week) — Prof. Jay D. Keasling *Berkeley, CA*

- Worked in a team of 3 to run a process controls and dynamics course (CBE 162) of 60-70 students
- Obtained above average ratings on all aspects of student course evaluations by holding weekly office hours, managing a discussion forum, developing interactive lab assignments, and grading exams

University of California, Berkeley - College of Chemistry Fall 2019
Graduate Student Instructor (10 hrs/week) — Dr. Negar Beheshti Pour *Berkeley, CA*

- Worked with a team of 8 to run an introductory chemical engineering course (CBE 40) of 62 students

- Obtained above average ratings on all aspects of student course evaluations by holding weekly office hours, managing a discussion forum, developing and grading assignments and assessments
- Awarded Outstanding Graduate Student Instructor

Georgia Institute of Technology - Center for Academic Success August 2016 – May 2018
Peer Mentor/Tutor *Atlanta, GA*

- Coached more than 50 students one-on-one in several subjects including Chemistry, Chemical Engineering, Computer Science, and Math
- Individually mentored 10-20 new tutors by running orientation and training events with a team of 5-10 and writing performance reviews

Georgia Institute of Technology - School of Physics August 2015 – May 2018
Undergraduate Teaching Assistant *Atlanta, GA*

- Co-supervised and taught lab section(s) of 20-30 students (total of 136) in Modern Mechanics
- Obtained above average ratings on all aspects of student course evaluations by guiding students on hands-on lab assignments, revising existing coding assignments, and mentoring new hires

TECHNICAL STRENGTHS

Computer Languages	MATLAB, Python, C/C++, Julia, Java
Software	Xilinx Vivado, Microsoft Office, ASPEN, COMSOL, AutoCAD
SEC Coursework	Intro to Object-Oriented Programming; Computational Problem Solving; Numerical Analysis; Mathematical Methods in Engineering; High Performance Computing
Additional Ph.D. Coursework	Introduction to Machine Learning; Experiential Advanced Control Design 1; Deep Reinforcement Learning, Decision Making, and Control

SERVICE AND OUTREACH

UC Berkeley Basic Needs Center August 2022 – Present
Food Pantry Volunteer *Berkeley, CA*

- Set up and restock food items in the pantry
- Assist visitors in obtaining resources from the pantry

University of California, Berkeley August 2020 – Present
Research Mentor *Berkeley, CA*

- Kelci Skinner, Undergraduate student in Chemical and Biomolecular Engineering (August 2022 – Present)
- Shawn Shin, Undergraduate student in Physics (February 2021 – June 2021)
- Mehul Raheja, Undergraduate student in Electrical Engineering and Computer Sciences (May 2020 – May 2021)

Graduate Women in Engineering August 2019 – Present
Member, Mentor Buddy *Berkeley, CA*

- Served as a "buddy" to mentor and aid a running total of 4 first-year members begin their programs at UC Berkeley; met on a minimum biweekly basis or as-needed

Graduate Student Advisory Committee June 2020 – May 2021
Special Projects Webmaster *Berkeley, CA*

- Headed special projects involving technical improvements to graduate-student-led programs in the Department of Chemical and Biomolecular Engineering
- Coordinated the development of a web-based solution to connect a running total of 27 undergraduate students with research projects within the department
- Created a communication network of 30-40 students to foster inclusion and discussion with the Asian American and Pacific Islander community within the department

Bay Area Scientists Inspiring Students August 2019 – December 2019
Volunteer Scientist *Berkeley, CA*

- Attended primary schools to interact and teach science lessons to second and third grade students using hands-on, inquiry-based learning experiences

HONORS AND AWARDS

4. Graduate Remote Instruction Innovations Fellow, 2021
3. Departmental Fellowship by Tom De Jonghe, 2021
2. Women in Chemical Engineering (WIC) Travel Award, 2020 *(virtual conference)*
1. Outstanding Graduate Student Instructor, 2020

PUBLICATIONS

6. **K. J. Chan**, G. Makrygiorgos, and A. Mesbah, "Multi-objective Bayesian optimization for data-efficient policy search for personalized cold plasma treatments," *To be submitted to the 2023 American Control Conference (ACC).*
5. **K. J. Chan**, J. A. Paulson, and A. Mesbah, "End-to-end auto-tuning of embedded control using multi-objective Bayesian optimization and deep learning: An application to cold atmospheric plasmas," *To be submitted to IEEE Transactions on Control Systems Technology.*
4. Y. Bao, **K. J. Chan**, A. Mesbah, and J. Mohammadpour Velni, "Learning-based adaptive-scenario-tree model predictive control with improved probabilistic safety using robust Bayesian neural networks," International Journal of Robust and Nonlinear Control, *Under Review.*
3. Y. Bao, **K. J. Chan**, A. Mesbah, and J. Mohammadpour Velni, "Learning-based adaptive-scenario-tree model predictive control with probabilistic safety guarantees using Bayesian neural networks," In 2022 American Control Conference (ACC), pp. 3260-3265. 2022.
2. D. Rodrigues, **K. J. Chan**, and A. Mesbah, "Data-driven adaptive optimal control under model uncertainty: An application to cold atmospheric plasmas," IEEE Transactions on Control System Technology. 2022.
1. **K. J. Chan***, J. A. Paulson*, and A. Mesbah, "Deep learning-based approximate nonlinear model predictive control with offset-free tracking for embedded applications," In 2021 American Control Conference (ACC), pp. 3475-3481. 2021.

* denotes equal contribution among authors

PRESENTATIONS

4. **K. J. Chan**, J. A. Paulson, and A. Mesbah, "End-to-end design and implementation of robust MPC on resource-limited hardware using multi-objective Bayesian optimization and deep learning," American Institue of Chemical Engineers 2022 Annual Meeting, Phoenix, Arizona, USA *To be presented November 2022.*

3. **K. J. Chan**, Y. Bao, J. Mohammadpour Velni, and A. Mesbah, "Bayesian optimization for performance-oriented model learning: An application to learning-based predictive and parameter-varying control of cold plasmas," American Institue of Chemical Engineers 2022 Annual Meeting, Phoenix, Arizona, USA *To be presented November 2022.*

2. **K. J. Chan**, J. A. Paulson, and A. Mesbah, "Automated tuning of generic embedded controllers using multi-objective Bayesian optimization," 2022 NorCal Control Conference, Santa Cruz, California, USA.

1. **K. J. Chan**, A. D. Bonzanini, and A. Mesbah, "Embedded deep learning-based robust model predictive control for fast-sampling atmospheric pressure plasma jets using field programmable gate arrays," American Institue of Chemical Engineers 2020 Annual Meeting, San Francisco, California, USA (virtual).