

# Brendon G. Anderson

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<b>Education</b>	<b>University of California, Berkeley</b> Ph.D. in Controls <i>Advisor:</i> Somayeh Sojoudi <i>Research Areas:</i> Optimization, Machine Learning, Control Theory <i>Minors:</i> Optimization, Statistics	Aug. 2018 – Present
	<b>University of California, Berkeley</b> M.S. in Controls <i>Thesis: Towards Optimality and Robustness Guarantees for Data-Driven Learning and Decision Making</i>	Aug. 2018 – May 2020
	<b>University of California, Los Angeles</b> B.S. in Mechanical Engineering ( <i>summa cum laude</i> ) <i>Technical Breadth Area:</i> Mathematics	Sep. 2015 – Mar. 2018

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<b>Experience</b>	<b>Graduate Student Researcher — UC Berkeley</b> <i>Advisor:</i> Somayeh Sojoudi <ul style="list-style-type: none"><li>Conducted various research projects surrounding robustness and optimality guarantees for nonconvex optimization problems in machine learning.</li></ul>	Aug. 2018 – Present
	<b>Jr. Development Engineer — UCLA Engineering</b> <i>Advisor:</i> Robert M'Closkey <ul style="list-style-type: none"><li>Designed, fabricated, and tested low-frequency folded pendulum accelerometer for use in UCLA's dynamic systems and control laboratories.</li></ul>	Jan. 2018 – Jun. 2018
	<b>CVT Analysis, Design, Control — Baja SAE</b> <ul style="list-style-type: none"><li>Developed electronic continuously variable transmission (CVT) and executed system identification and control.</li><li>Modeled mechanical CVT and constructed flyweight optimization program.</li></ul>	Sept. 2015 – Jun. 2018
	<b>Research Assistant — UCLA Mathematics</b> <i>Advisors:</i> Matt Haberland, Olga Turanova, and Andrea L. Bertozzi <ul style="list-style-type: none"><li>Formulated performance quantification methods for swarm coverage control algorithms.</li></ul>	Jun. 2017 – Aug. 2017

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<b>Publications</b>	[1] <b>B. G. Anderson</b> , Z. Ma, J. Li, and S. Sojoudi, "Tightened convex relaxations for neural network robustness certification," 2020. Under review.
	[2] <b>B. G. Anderson</b> and S. Sojoudi, "Global optimality guarantees for nonconvex unsupervised video segmentation," in <i>Proceedings of the 57th Annual Allerton Conference on Communication, Control, and Computing</i> , pp. 965–972, 2019.

- [3] **B. G. Anderson**, E. Loeser, M. Gee, F. Ren, S. Biswas, O. Turanova, M. Haberland, and A. L. Bertozzi, “Quantifying robotic swarm coverage,” in *Informatics in Control, Automation and Robotics: 15th International Conference, ICINCO 2018, Porto, Portugal, July 29–31, 2018, Revised Selected Papers*, vol. 613 of *Lecture Notes in Electrical Engineering*, pp. 276–301, Springer, 2019.
- [4] **B. G. Anderson**, E. Loeser, M. Gee, F. Ren, S. Biswas, O. Turanova, M. Haberland, and A. L. Bertozzi, “Quantitative assessment of robotic swarm coverage,” in *Proceedings of the 15th International Conference on Informatics in Control, Automation and Robotics (ICINCO)—Volume 2*, pp. 91–101, 2018.

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<b>Awards</b>	• Graduate Division Block Grant Award, UC Berkeley	Apr. 2019
	• Harry M. Showman Prize (schoolwide research award), UCLA	Jun. 2018
	• Jonathan David Wolfe Memorial Scholarship, UCLA	Apr. 2018

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<b>Teaching</b>	<b>Supplemental Instructor — Palomar College</b>	
	• <i>Electromagnetism</i> (PHYS 231)	Spring 2015
	• <i>General Chemistry</i> (CHEM 115)	Fall 2014, Spring 2015

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<b>Professional Activities</b>	• Peer Advisor for the Bay Area Graduate Pathways to Stem (GPS) program, hosted by UC Berkeley Engineering and Stanford Engineering, 2020.	
	• Grant proposal contributor; assisted with writing DARPA funding proposal, 2019.	
	• Chair of the session “Data Analytics”, 57th Annual Allerton Conference on Communication, Control, and Computing, 2019.	

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<b>Relevant Coursework</b>	<b>Optimization</b>	
	• <i>Nonlinear Programming</i> , Professor Javad Lavaei	
	• <i>Convex Optimization</i> , Professors Somayeh Sojoudi and Laurent El Ghaoui	
	• <i>Optimization Models</i> , Professors Laurent El Ghaoui and Alex Bayen	

#### **Machine Learning**

- *Statistical Learning Theory* (audit), Professors Ben Recht and Moritz Hardt
- *Learning and Optimization*, Professor Anil Aswani
- *Deep Learning* (online), Professor Andrew Ng
- *Machine Learning* (online), Professor Andrew Ng

#### **Control Theory**

- *Nonlinear Systems: Analysis, Stability, and Control*, Professor Claire Tomlin
- *Advanced Control Theory I*, Professor Roberto Horowitz
- *Advanced Control Theory II*, Professor Masayoshi Tomizuka

- *Linear Dynamic Systems*, Professor Robert M'Closkey
- *Digital Control*, Professor Tsu-Chin Tsao

### **Mathematics and Statistics**

- *Theoretical Statistics (Classical)*, Professor Will Fithian
- *Theoretical Statistics (High-dimensional)*, Professor Yan Shuo Tan
- *Engineering Mathematics*, Professors Andrew Packard, Somayeh Sojoudi, and Kameshwar Poolla
- *Analysis (Real; Complex; Numerical)*
- *Differential Equations (Ordinary; Partial)*

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### **Skills**

*Programming:* MATLAB, Python, C++, CVX

*Tools and Applications:* L<sup>A</sup>T<sub>E</sub>X, TikZ, LabVIEW