

LIANGJIE (JEFFREY) CHEN

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RESEARCH INTERESTS data-driven control theory, mathematical optimization, algebraic graph theory, scientific and high performance computing, power system modeling and optimization, reinforcement learning

EDUCATION **University of Toronto**
Ph.D., Electrical and Computer Engineering In progress
M.A.Sc., Electrical and Computer Engineering 2022
B.A.Sc. (Graduated with Honours), Computer Engineering 2020
Minors in Artificial Intelligence Engineering, Robotics and Mechatronics Engineering

RESEARCH EXPERIENCE **Graduate Student Researcher** August 2020 – Present
Department of Electrical and Computer Engineering, University of Toronto
Advisor: Prof. J. W. Simpson-Porco

- Current research project: data-driven disturbance rejection and estimation for unknown linear time-invariant systems
- Past research project: development and analysis of a fixed-point algorithm for the AC power flow problem

Undergraduate Student Researcher May 2019 – April 2020
Department of Electrical and Computer Engineering, University of Toronto
Advisor: Prof. J. E. Tate

- Acceleration of Newton-Raphson based power flow computations by training convolutional neural nets to generate viable bus voltage values as initial conditions

Undergraduate Research Assistant May – August 2017
Department of Mechanical and Industrial Engineering, University of Toronto
Advisor: Dr. A. Melnikov

- Comparison of Single Frequency-Thermal Wave Radar imaging and Lock-in Thermography on signal-to-noise ratio across wide frequency range and measurement time

PAPERS
L. Chen and J. W. Simpson-Porco, “Data-driven output regulation using single-gain tuning regulators,” in *2023 IEEE Conference on Decision and Control*, (Singapore), pp. 2903–2909, Dec. 2023
L. Chen and J. W. Simpson-Porco, “A fixed-point algorithm for the AC power flow problem,” in *2023 American Control Conference*, (San Diego, CA, USA), pp. 4449–4456, May 2023
L. Chen and J. E. Tate, “Hot-Starting the Ac Power Flow with Convolutional Neural Networks,” Apr. 2020. arXiv: 2004.09342 [eess.SY]
A. Melnikov, L. Chen, D. R. Venegas, K. Sivagurunathan, Q. Sun, A. Mandelis, and I. R. Rodriguez, “Single frequency thermal wave radar: A next-generation dynamic thermography for quantitative non-destructive imaging over wide modulation frequency ranges,” *Review of Scientific Instruments*, vol. 89, Apr. 2018

HONOURS AND AWARDS	Postgraduate Scholarship – Doctoral	2024 – 2026
	<i>Natural Sciences and Engineering Research Council of Canada</i> (\$120,000 total)	
	Ontario Graduate Scholarship	2023 – 2024
	<i>Government of Ontario</i> (Awarded twice for \$30,000 total; declined 2024 award for PGS-D)	
	Hatch Graduate Scholarship for Sustainable Energy Research	2022 – 2023
	<i>Hatch Ltd., Canada</i> (Awarded twice for \$20,000 total)	
	Queen Elizabeth II Graduate Scholarship in Science and Technology	2022
	<i>Government of Ontario</i> (\$15,000 total)	
TECHNICAL SKILLS	H. W. Price Research Fellowship in Electrical Engineering	2021
	<i>Hydro One Ltd., Canada</i> (\$4,300 total)	
	Undergraduate Student Research Award	2019
	<i>Natural Sciences and Engineering Research Council of Canada</i> , (\$5,600 total)	
	Dean’s Honours List	2018 – 2020
	<i>Faculty of Applied Science and Engineering, University of Toronto</i>	
	President’s Entrance Scholarship	2016
	<i>Faculty of Applied Science and Engineering, University of Toronto</i> , (\$2,000 total) <i>Faculty of Arts and Science, University of Toronto</i> (\$2,000 total, declined)	
TEACHING EXPERIENCE	Programming Languages: MATLAB, Julia, Python, C++, C, L ^A T _E X, Bash	
	Softwares and APIs:	
	• Mathematical Optimization: JuMP, CVX, YALMIP	
	• Power System Analysis: PowerModels.jl, MATPOWER, PSCAD	
	• Machine Learning: Flux.jl, PyTorch	
	• Simulation: Simulink	
	Teaching Assistant	
	<i>University of Toronto</i>	
PROFESSIONAL TRAINING	• ECE1659 Robust and Optimal Control (Winter 2024)	
	• ECE557 Linear Control Theory (Fall 2021-24)	
	• ECE311/ECE356 Introduction to Control Systems (Fall/Winter 2022-24)	
	• ECE216 Signals and Systems (Winter 2022-23)	
	• MAT290 Advanced Engineering Mathematics (Fall 2023, Head TA Fall 2024-25)	
	• MAT188 Linear Algebra (Fall 2020-2022)	
	Scientific and High Performance Computing	June 2019
	<i>Compute Ontario Summer School</i>	
PROFESSIONAL AFFILIATIONS	Student Member , <i>Institute for Electrical and Electronics Engineers (IEEE)</i>	
	Student Member , <i>Society for Industrial and Applied Mathematics (SIAM)</i>	

VOLUNTEERING AND OTHER EXPERIENCE	Event Planner , <i>IEEE Control System Society/American Control Conference</i>	2024
	Violinist , <i>UofT Campus Philharmonic Orchestra</i>	2021 – Present
	Assistant Concertmaster , <i>Skule Music Chamber Night</i>	2019
	Fabrication Team Member , <i>Blue Sky Solar Racing</i>	2016 – 2017

Last Updated: September 2, 2025