Mohamad Fares El Hajj Chehade

Ph.D. Student · Electrical and Computer Engineering

The University of Texas at Austin

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Education _____

The University of Texas at Austin

Ph.D. IN Electrical and Computer Engineering

- Advisor: Dr. Hao Zhu
- Research Interest: Risk-aware Transfer in Reinforcement Learning, Physics-aware Supervised Learning
- Relevant Courses: Reinforcement Learning, Learning-based Optimal Control, Applied Stochastic Processes, Applied Machine Learning, Convex Optimization

American University of Beirut

B.Eng. in Electrical and Computer Engineering

- GPA: 4.25/4.00
- Focus Area: Power and Energy Systems
- Minor in Mathematics
- Final Year Project: Optimal Power Flow via Machine Learning (Advisor: Dr. Rabih Jabr)
- Research Project: Microgrid Sizing using Ordinal Optimization (Advisor: Dr. Sami Karaki)
- Relevant Graduate Courses: Power System Planning, Renewable Electric Energy, Advanced Optimization

Experience ____

Los Alamos National Laboratory - T-5 Applied Mathematics and Plasma Physics Group

GRADUATE RESEARH ASSISTANTSHIP (GRA) - MENTORS: DR. WENTING LI, DR. BRIAN BELL

- Worked on the verification of neural networks in physical and safety-critical systems
- Developed two algorithms for determining large verifiable input regions of neural networks

University of Connecticut - Center for Clean Energy Engineering - PEARL Lab

RESEARCH INTERNSHIP - ADVISOR: DR. ALI BAZZI

- Worked with Ward Leonard, a leading industrial motor manufacturing company
- Developed a fault diagnosis algorithm for power electronic inverters using combinational logic
- · Optimized and constructed the inverter circuit for high-power testing using mixed-integer linear programming

OTB Consult

ENERGY RESEARCH

- Collaborated with UNDP for conducting site reviews and surveys for the installation of solar solutions in Beirut
- Reviewed and developed technical notes on standards related to solar photovoltaics (PV)
- Researched relevant solar energy installations for a project in Iraq
- Researched plastic recycling mechanisms and applications

Swiss Federal Institute of Technology Lausanne (EPFL)

TECH4IMPACT SUMMER SCHOOL

- Selected among 40 students from around the world
- Worked in a team of 4 students under the guidance of a renowned NGO
- Challenge: energy access for organizations in displacement settings
- Carried research on the topic and interviews with key experts in the field
- Developed the solution of Smart Solar Mini-Grids controlled by an algorithm and financed by Power Purchase Agreements
- Achievement: pitched this solution at a public event, and the team won the "Best Pitch" award out of 10 groups

Austin, Texas Aug. 2023 - Present

Beirut, Lebanon Aug. 2019 - Jun. 2023

Jun. 2024 - Aug. 2024

Los Alamos, NM

Storrs, CT Jun. 2022 - Aug. 2022

Beirut, Lebanon May 2022 - Jun. 2022

Lausanne, Switzerland Jun. 2021 - Sep. 2021

American University of Beirut (AUB)

Beirut, Lebanon 2021 - 2023

STUDENTS FOR SUSTAINABLE ENERGY FOR ALL (SSEA) CLUB

- Supervised the student-led initiative "Sustainable Buildings on Campus" responsible for energy projects on campus
- · Designed solar-powered benches for outdoor device charging
- Developed an air-conditioning control system for classes and faculty offices
- Analyzed the feasibility of installing LED lamps in the engineering building

Publications _____

Published

El Hajj Chehade, M. F., Cho, Y.-H., Chinchali, S., Zhu, H., Cho, Y. 2024. Should We Use Model-Free or Model-Based Control? A Case Study of Battery Control. 2024 56th North American Power Symposium (NAPS), 1-5. DOI: 10.1109/NAPS61145.2024.10741791.

PREPRINTS

- **El Hajj Chehade, M. F.**, Bedi, A. S., Zhang, A., Zhu, H. 2024. CAT: Caution Aware Transfer in Reinforcement Learning via Distributional Risk. *arXiv preprint*, https://arxiv.org/abs/2408.08812.
- **El Hajj Chehade, M. F.**, Bell, B. W., Bent, R., Zhu, H., Li, W. 2024. LEVIS: Large Exact Verifiable Input Spaces for Neural Networks. *arXiv preprint*, https://arxiv.org/abs/2408.08824.

IN PREPARATION

El Hajj Chehade, M. F., Karaki, S. 2025. BOOST: Microgrid Sizing using Ordinal Optimization. In preparation for Texas Power and Energy Conference (TPEC) 2025.

Skills_____

- Programming Languages: Python, MATLAB, C++, C, R, Java, C#, SQL
- Software: Simulink, SPICE, HOMER, PVSyst, MATPOWER, LabVIEW, AutoCAD, Microsoft Office Suite
- Languages: English, French, Arabic

Reviewer_____

Sep. 2023 - Present	IEEE Transactions on Smart Grid
- July 2024 Present	Asilomar Conference on Signals, Systems, and Computers

Awards & Honors _____

2024	Best Graduate Presentation Award at NAPS 2024
2023 - Present	Cockrell School of Engineering Fellowship
2023	Mohamad Ali Safieddine Award for Academic Excellence for ranking first across the AUB Maroun Semaan Faculty of Engineering and Architecture
2023	ECE Distinguished Graduate Award for ranking first among ECE graduates
2023	Exceptional ECE Final Year Project Award Power and Energy Systems
2021	Best Pitch Award EPFL Tech4Impact Summer School
2019 - 2023	Dean's Honor List AUB Maroun Faculty of Engineering and Architecture - every given semester

References_

- Dr. Hao Zhu Associate Professor, ECE Department, The University of Texas at Austin
 ☑ haozhu@utexas.edu
- Dr. Wenting Li Research Scientist, T-5 group, Los Alamos National Laboratory
 ☑ wenting@lanl.gov
- Dr. Amrit Singh Bedi Assistant Professor, ECE Department, The University of Central Florida
 ☑ amritbedi@ucf.edu
- Dr. Brian Bell Associate Professor, ECE Department, The University of Texas at Austin
 bwbell@lanl.gov

- Dr. Sami Karaki Professor, ECE Department, American University of Beirut Skaraki@aub.edu.lb