

Mohamad Fares El Hajj Chehade

PH.D. STUDENT · ELECTRICAL AND COMPUTER ENGINEERING

The University of Texas at Austin

✉ chehade@utexas.edu | 🌐 <https://www.linkedin.com/in/mfhchehade/>

Education

The University of Texas at Austin

Austin, Texas

PH.D. IN ELECTRICAL AND COMPUTER ENGINEERING

Aug. 2023 - Present

- 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

Beirut, Lebanon

B.ENG. IN ELECTRICAL AND COMPUTER ENGINEERING

Aug. 2019 - Jun. 2023

- 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

Los Alamos, NM

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

Jun. 2024 - Aug. 2024

- 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

Storrs, CT

RESEARCH INTERNSHIP - ADVISOR: DR. ALI BAZZI

Jun. 2022 - Aug. 2022

- 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

Beirut, Lebanon

ENERGY RESEARCH

May 2022 - Jun. 2022

- 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)

Lausanne, Switzerland

TECH4IMPACT SUMMER SCHOOL

Jun. 2021 - Sep. 2021

- 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

- 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 **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**

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. Sandeep Chinchali
Assistant Professor, ECE Department, The University of Texas at Austin
✉ sandeepc@utexas.edu
- 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. Rabih Jabr
Professor and IEEE Fellow, ECE Department, American University of Beirut
✉ rj30@aub.edu.lb
- Dr. Ali Bazzi
Associate Professor, ECE Department, University of Connecticut
✉ bazzi@uconn.edu
- Dr. Sami Karaki
Professor, ECE Department, American University of Beirut
✉ skaraki@aub.edu.lb