Mohamad 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 — *Austin, Texas*

Ph.D. in Electrical and Computer Engineering — *Aug. 2023 – Present*

- Advisor: Dr. Hao Zhu
- Research Interests: Large Language Model Alignment, Risk-aware Transfer Learning, Learning for Optimization and Control, Neural Network Verification in Safety-Critical Systems
- Relevant Courses: Reinforcement Learning, Generative AI, Statistical Machine Learning, Applied Machine Learning, Applied Stochastic Processes, Learning-based Optimal Control, Convex Optimization, Energy Optimization and Operation

American University of Beirut — *Beirut, Lebanon*

B.Eng. in Electrical and Computer Engineering — *Aug. 2019 – Jun. 2023*

- GPA: 4.24/4.00 | Minor in Mathematics
- Final Year Project: Optimal Power Flow via Machine Learning (Advisor: Dr. Rabih Jabr)

Experience

Los Alamos National Laboratory - T-5 Applied Mathematics and Plasma Physics Group — *Los Alamos, NM*

Graduate Research Assistanship (GRA) - Mentor: Dr. Russell Bent — *May. 2025 - Aug. 2025*

- Continued research on the verification of neural networks in physical and safety-critical systems
- Extended and tested algorithms for determining large verifiable input regions of neural networks

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

American University of Beirut (AUB) *Beirut, Lebanon*

Students for Sustainable Energy for All (SSEA) Club *2021 - 2023*

- 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 / Accepted

Chehade, M., & Zhu, H. (2026). NEO-Grid: A Neural Approximation Framework for Optimization and Control in Distribution Grids. *Proceedings of the 59th Hawaii International Conference on System Sciences (HICSS 2026)*. arXiv:2509.21668

Chehade, M., Li, W., Bell, B. W., Kazi, S. R., Bent, R., & Zhu, H. (2025). LEVIS: Large Exact Verifiable Input Spaces for Neural Networks. *Proceedings of the 42nd International Conference on Machine Learning (ICML 2025)*. arXiv:2408.08824

Chehade, M., Ghosal, S. S., Chakraborty, S., Reddy, A., Manocha, D., Bedi, A. S., & Zhu, H. (2025). Bounded Rationality for LLMs: Satisficing Alignment at Inference-Time. *Proceedings of the 42nd International Conference on Machine Learning (ICML 2025)*. arXiv:2505.23729

Chehade, M., & Karaki, S. (2025). BOOST: Microgrid Sizing Using Ordinal Optimization. *2025 IEEE Texas Power and Energy Conference (TPEC)*, College Station, TX, USA, pp. 1–4. doi:10.1109/TPEC63981.2025.10907217.

Chehade, M., Cho, Y.-H., Chinchali, S., & Zhu, H. (2024). Should We Use Model-Free or Model-Based Control? A Case Study of Battery Control. *2024 56th North American Power Symposium (NAPS)*, El Paso, TX, USA, pp. 1–5. doi:10.1109/NAPS61145.2024.10741791.

Under Review

Chehade, M., Bedi, A. S., Chakraborty, S., Zhang, A., & Zhu, H. (2025). Test-Time Risk Adaptation with Mixture of Agents. Under review at *ICLR 2026*.

Chehade, M., Kazi, S., Li, W., Zhu, H., Bent, R., & Bell, B. W. (2025). Certified Robustness Training: Closed-Form Certificates via CROWN. Under review at *ICLR 2026*.

In Preparation

Cho, Y.-H., **Chehade, M.**, Al Janahi, F., Lim, S., Mohammadi, J., & Zhu, H. (2026). Carbon-Aware Optimal Energy Management for PJM. In preparation for *2026 IEEE Texas Power and Energy Conference (TPEC)*.

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**
Dec. 2024 - Present	**Texas Power and Energy Conference (TPEC)**
June 2025 - Present	**Hawaii International Conference on System Sciences (HICSS)**
Sep. 2025 - Present	**IEEE Systems Journal**

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. Russell Bent
  Technical Staff Member, Los Alamos National Laboratory)
  rbent@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
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- Dr. Sami Karaki
  Professor, ECE Department, American University of Beirut
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