Hussein Sharadga

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Education

Texas A&M University, College Station, Texas | Jan. 2019 – Aug. 2022
Ph.D. in Mechanical Engineering
Advisor: Prof. Bryan Rasmussen

Jordan University of Science & Technology, Irbid, Jordan | Sep. 2015 – July 2017
M.Sc. in Mechanical Engineering
Advisor: Prof. Moh'd Al-Nimr
Al-Balqa' Applied University, Irbid, Jordan | Aug. 2011– June 2015
B.Sc. in Mechanical Engineering

Academic Positions

Research Affiliate | Aug. 2024 – Present
University of Texas at Austin

Assistant Professor | Aug. 2024 – Present
School of Engineering, Texas A&M University- International

Postdoc Researcher | Dec. 2022 – Aug. 2024
University of Texas at Austin
Advisor: Prof. Javad Mohammadi

Visiting Assistant Professor | Sep 2023 – May 2024
University of Texas Permian Basin

Research Focus

Artificial Intelligence (AI): Machine Learning, Deep Learning
Optimization: Convex/Non-convex, Mixed Integer Programming, Heuristic
Energy: Power Grid, Photovoltaic Technology
Scheduling, Decision-Making under Uncertainty, Stochastic Programming

National Awards

ARPA-E Grid Optimization Competition Challenge 3 Prize Winner | 2023
University of Texas at Austin
Trail 1: ranked 2nd in the total score
Trail 2: ranked 1st
Trail 3: ranked 2nd **|$115,000 prize|** Link

Grant

ERI: Probability-Informed Deep Learning and Probabilistic-Adversarial Networks for Time Series Forecasting (Pending Review)
PI: **Hussein Sharadga**, Co-PIs: None
Budget: $200,000
Submitted to: NSF

AI Research Fellowship

Handshake AI Fellow | *Handshake / Confidential AI Labs* | Remote | *Oct. 2025 – Present*

- Participating in a selective AI fellowship aimed at improving the robustness of large language models (**LLMs**) by designing challenging prompts that expose their weaknesses.
- Contributions support retraining and advancement of state-of-the-art LLMs.

Publications

h-index: 8, Citations: 668 (as of Nov. 2025)
Google Scholar Profile: Google Scholar

Manuscripts Published:

1) Hussein Sharadga, Javad Mohammadi, Constance Crozier, Kyri Baker, "Scalable Solutions for Security-Constrained Optimal Power Flow with Multiple Time Steps", **IEEE Transactions on Industry Applications**, 2025.

2) Maureen S Golan, Hussein Sharadga, Javad Mohammadi, "Power Grid Resilience: Insights from Sensitivity Analysis and Scenario Simulation Using the Grid Optimization Platform", **Environment Systems and Decisions Journal**, 2025.

3) Hussein Sharadga, Javad Mohammadi, "Scalable Unit Commitment for Large Power Grids: Relaxation, Tightening, and GPU-Based Solvers Evaluation", **IEEE North American Power Symposium (NAPS)**, 2025.

4) Hussein Sharadga, Javad Mohammadi, Constance Crozier, Kyri Baker, "Optimizing Multi-Timestep Security-Constrained Optimal Power Flow for Large Power Grids", **IEEE Texas Power and Energy Conference** (TPEC), 2024.

5) Ahmad Dawahdeh, Hussein Sharadga, **"**A Novel Augmented MPPT Controller for Photovoltaic Systems under Rapid Solar Radiation Changes Using Neural Network", **Sustainability Journal**, 2024.

6) Shima Hajimirza, Hussein Sharadga, "Learning Thermal Radiative Properties of Porous Media from Engineered Geometric Features", **Int. J. Heat Mass Transf**, 2021.

7) Hussein Sharadga, Shima Hajimirza, Elmer PT Cari, "A Fast and Accurate Single-Diode Model for Photovoltaic Design", **IEEE Journal**, 2020.

8) Hussein Sharadga, Shima Hajimirza, Robert S Balog, "Time Series Forecasting of Solar Power Generation for Large-Scale Photovoltaic Plants", **Renewable Energy**, 2020.

9) Ali Akbar Shafi, Hussein Sharadga, Shima Hajimirza, "Design of Optimal Power Point Tracking Controller Using Forecasted Photovoltaic Power and Demand", **IEEE Transactions on Sustainable Energy**, 2019.

10) Hussein Sharadga, Ahmad Dawahdeh, Moh'd A Al-Nimr, "A hybrid PV/T and Kalina Cycle for Power Generation", **Int J Energy Res,** 2018.

11) Moh'd A Al-Nimr, Suhil Kiwan, Hussein Sharadga, "Simulation of a Novel Hybrid Solar Photovoltaic/Wind System to Maintain the Cell Surface Temperature and to Generate Electricity", **Int J Energy Res**, 2018.

12) Moh'd A Al-Nimr, Suhil Kiwan, Hussein Sharadga, "A Hybrid TEGs/Wind System Using Concentrated Solar Energy and Chimney Effect", **Int J Energy Res**, 2018.

Manuscripts Under Review:

13) Hussein Sharadga, Yuhan Du, Javad Mohammadi, "Probabilistic-Adversarial Networks (PANs): A Probability-Informed Deep Learning Approach for Electrical Demand Forecasting", **IEEE Transactions on Smart Grid**, 2025.

14) Hussein Sharadga, Abdullah Hayajneh, Erchin Serpedin, "Evaluating AI-based Image Inpainting Techniques for Facial Components Restoration Using Semantic Masks", **Image and Vision Computing**, 2025.

15) Hussein Sharadga, Golbon Zakeri, "Scheduling Battery Systems Under Load Uncertainty Using Markov Decision Process", **Energies Journal**, 2025.

Teaching Experiences

Texas A&M International University Aug. 2024 – Present
Assistant Professor

- Teaching courses in Statistics, Eng. Modeling & Design, and Smart Grid Optimization.
- Student Evaluations *(Average: 4.75 out of 5)*

University of Texas Permian Basin Sep. 2023 – May 2024
Visiting Assistant Professor

- Instructed undergraduate courses in Intro to Thermodynamic, Thermodynamic II, Fluid Mechanics II, Heat Transfer, Engineering Graphic, Computer-Aided Mechanical Design, Dynamics, Advanced Engineering Analysis, and Thermo-fluid & Mech Sys Lab.
- Student Evaluations Link *(Range: 4.0–4.47, Average: 4.23 out of 5)*

University of Texas at Austin- Guest Lecturer Jan. 2023 - May 2023

- Course: Energy Systems Operation / Optimization.

Texas A&M University- College Station Sep. 2020 - June 2022
Teaching Assistant

- Assisted in Courses: Mechanical Measurement Lab (MEEN 260), Dynamic System & Control Lab (MEEN 364), and Principles of Building Energy Analysis (MEEN 437).

Binghamton University Aug. 2018 - Dec. 2018
Teaching Assistant

- Course: Thermodynamic (ME 331).

Jordan University of Science & Technology Sep. 2015 - July. 2017
Teaching Assistant

- Courses: Heat Transfer, Fluid Dynamic, Engineering Drawing Lab.

Professional Activities:

1. Invited Talks

Co-speaker with Javad Mohammadi, 'Electric-Stampede's Approach: Fast and Robust Strategies for Large-scale mixed-integer SCOPF', **ARPA-E** Grid Software Annual Review. Link

2. Mentoring

Maureen S Golan, Ph.D. Student, 2023, The University of Texas at Austin.
Arash Khojaste, Ph.D. Student, 2022, University of Massachusetts Amherst.

3. Poster Presentations

Electric Stampede: A Robust Solution to The Challenging Task of Us Power Grid Optimization, INFORMS Annual Meeting, Phoenix (2023).

Time Series Forecasting of Solar Power Generation for Large-Scale Photovoltaic Plants, Texas A&M Conference on Energy (2019).

A Fast and Accurate Single Diode Model for Photovoltaic Design, IMECE, Utah (2019).

4. Code Repository

Scheduling Battery Systems Under Uncertainty Using Markov Decision Process, (2023). Link

Sizing and Scheduling Solar Photovoltaic-Battery System using Convex Optimization, Machine Learning, and Stochastic Programming, (2022). Link

Application of Artificial Intelligence for Thermal Radiation in Porous Media, (2020). Link

5. University Service

Session Chair| Fall 2025
North American Power Symposium (NAPS 2025)

Search Committee Member| Fall 2024
Texas A&M International University

ABET Committee Member| Fall 2024
Texas A&M International University

ABET Committee Member| Fall 2023
University of Texas Permian Basin

Programming Expertise

Coding Languages: Python, MATLAB, Julia, C/C++.

AI Python Libraries: Keras, Pytorch, Scikit-learn.

Optimization Solvers: Gurobi, Mosek, IPOPT, Cardinal Optimizer (COPT), HiGHS.

Last updated: Nov. 2025