CV-Hadi Rouhani

Contact Information

Dept. of Computing Science, University of Alberta,
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Websites: **LinkedIn** - **Google Scholar** - **Github**

Research Interests

Machine learning and data science in smart energy systems, convex optimization, probability and statistics, queueing theory and computer networks.

Research Skills Highlights

Advanced programming with Python, C and C++, object oriented programming, Linux based C programming, solving optimization problems in python using cvxopt/cvxpy modules

Education

- Ph.D. Student in Computing Science - In progress
  University of Alberta, Canada
- M.Sc. in Energy Systems
  Thesis title: *"Multiport DC–DC–AC Modular Multilevel Converters For Hybrid AC/ DC Power Systems"* University of Alberta, Canada
- M.Sc. in Electrical & Computer Engineering
  Thesis title: *"Parzen Window Based Probabilistic Power Flow Analysis in Power Systems with Correlated Uncertainties"* Shiraz University, Shiraz, Iran
- B.Sc. degree (with distinction) in Electrical & Computer Engineering
  Project Title: *"Data analysis in EMTP-RV software environment by incorporating Matlab toolboxes using object-oriented JavaScript"* Shiraz University, Shiraz, Iran

Publications

Journals

- **Mohammadhadi Rouhani**, Mohammad Mohammadi, and Marco Aiello, "A Fuzzy-based Soft Clustering Probabilistic Power Flow Considering Inter-Event Time Correlation", *Electric Power Systems Research Elsevier*, 107677, 2021. [**Link**]
- **Mohammadhadi Rouhani** and Gregory J. Kish, "Multiport DC-DC-AC Modular Multilevel Converters for Hybrid AC/DC Power Systems," *IEEE Transactions on Power Delivery*, Vol. 35, no. 1, pp. 408-419, 2019. [**Link**]
- **Mohammadhadi Rouhani** and M. Mohammadi, "Probabilistic Distribution Power Flow Based on Finite Smoothing of Data Samples Considering Plug-in Hybrid Electric Vehicles," *Arxiv*, preprint:1710.10775, 2017. [**Link**]
- **Mohammadhadi Rouhani**, M. Mohammadi, A. Kargarian "Parzen Window Density Estimator Based Probabilistic Power Flow Considering Correlated Uncertainties," *IEEE Transactions on Sustainable Energy*, vol. 7, no. 3, pp. 1170-1181, 2016. [**Link**]

Conferences

- **Mohammadhadi Rouhani**, Omid Ardakanian, and Petr Musilek, "Optimal Sizing of Electric Charging Stations equipped with renewable Energy Sources," *Submited to IEEE Power & Energy Society General Meeting (PES-GM)*, Denver, Colorado, 2022.
- Prasad Prakash Malya, Laura Fiorini, **Mohammadhadi Rouhani**, and Marco Aiello, "Electric vehicles as distribution grid batteries: a reality check," *Proceedings of Energy Informatics Academy Conference*, Beijing China, 2021. [**Link**]
- **Mohammadhadi Rouhani**, Gregory J. Kish, "A transformerless DC-DC MMC based on symmetrically interlinked subconverters," *IEEE 18th Workshop on Control and Modeling for Power Electronics (COMPEL)*, Stanford, 2017. [**Link**]
- **Mohammadhadi Rouhani**, Mohammad Mohammadi, and Mohammad Mehdi Arefi, "Automated Monitoring and Performance Assessment of a Grid Connected Synchronous Generator Considering Power System Stabilizer," **International Conference on Electric Industry Automation (ICEIA)**, pp. 43-48, 2015. [**Link**]

Invited Journal/ Conference Reviews

- IEEE Power & Energy Society General Meeting, Denver Colorado, 2022

- IET Generation, Transmission, and Distribution
- IEEE Transactions on Circuits and Systems I
- IEEE Transactions on Power Delivery

Work Experience

University of Alberta, Edmonton, Canada

- **Machine Learning & Optimization Researcher (contract full-time)**
  Department of Computing Science — Sept 2020 - Present
  Areas of research:
  - Convex optimization
  - Queueing system modeling of charging stations
  - Formulating capacity provisioning for sizing of charging stations
  - Smart control and operation of charging stations
  - Learn from data trajectories using supervised methods

  Department of Electrical & Computer Engineering — Sept 2016 - July 2019
  Areas of research:
  - State space and control modeling
  - Modeling LQR for power electronics control and operation
  - Analyze switched-mode and time averaged-mode of Power converters
  - Develop state space equations for power electronics converters
- **Teaching Assistant (contract full-time)**
  Department of Computing Science — Sept 2020 - Dec 2020
  - CMPUT 274 - Fall 2020

  Department of Electrical & Computer Engineering — Sept 2017 - Sept 2019
  - ECE 209 - Winter 2018, Winter 2019
  - ECE 203 - Winter 2018, Winter 2019
  - ECE 202 - Fall 2017, Fall 2018
- **Senior Teaching Assistant (contract full-time)**
  Department of Electrical & Computer Engineering — Sept 2018 - April 2019
- **Resident Advisor (contract part-time)**
  North Campus Residence, University of Alberta — May 2017 - Sept 2018
  I was selected through multiple round of interviews to be the liason of resident students in the residence. My role was to plan and advise on programs arranged for students and residents.

Universität Stuttgart, Stuttgart, Germany

- **Computing Science Research Supervisor (contract full-time)** Dec 2019 - July 2020
  Supervised M.Sc students:
  - Mr. Prasad Prakash Malya, M.Sc. thesis title: "*Economic feasibility analysis of vehicle-to-grid service from an EV owner's perspective in the german electricity market*" passed with **excellent** grade. [Link] March 2020
    Currently employed as Embedded Software Engineer at Bosch, Stuttgart.
  - Mr. Kaushik Sadhu, M.Sc. thesis title: "*The Integration of Electric Vehicles in the Smart Grid*" passed with **excellent** grade. [Link] July 2020
    Currently employed as Project Engineer at mu-zero HYPERLOOP, Stuttgart.

I worked as a Researcher at Service Computing Department under Prof. Marco Aiello supervision. our works are published in one peer-reviewed journal (1st author) and two conference venues (co-authored).

Surplec HV Company, Spruce Grove, Canada

- **Test Data Intern (probationary)** July 2019 - Sept 2019
  I started my professional work right after my M.Sc. program completion at the University of Alberta as an intern to analyze the test data of transformers. My role was to make sure that test results comply with the highest standards.
- **Test Data Tech Lead (contract full-time)** Sept 2019 - Nov 2019 At the end of my probation period, I was promoted as the Lead of Product Department to report test results data to the project manager.

Awards

Academic Awards

- Nominated by FGSR for Vanier NSERC scholarship for national competition among 100 top graduate students March 2018
- Granted direct M.Sc. admission at Iran top universities (Shiraz University, Shiraz University of Technology, and Iran University of Science & Technology) (Given only to the Top 3 students) Sept. 2013
- Alumni Association Best Student Award (1^{st} Place Among Students of Power and Control Engineering Dept.) July 2013
- Achieved 2^{nd} rank of GPA Among Electrical & Power B.S. Students Sept. 2013

Scholarship Awards

University of Alberta, Canada:

- Graduate Research Fellowship - $ 31500 Jan 2021 - Present
- Doctoral Recruitment Scholarship - $ 15000 Sept 2020 - Sept 2021
- FGSR Travel Award - $ 2000 July 2017
- GSA Travel Award - $ 500 July 2017

Louisiana State University, USA [DECLINED]

- Full scholarship with tuition waive PhD position $ 32000 USD Sept 2015

Leadership Skills

- **President and CEO**, Tasnim Society-Iranian Cultural non-profit organization registered at the University of Alberta. Apr 2017 - May 2018
- **Volunteer Outreach**, Let's Talk Science, University of Alberta. Sep - Dec 2017
- **Vice President Operation**, Newton Place Residence, University of Alberta Sep 2017
- **Volunteer** at Office of Sustainability, University of Alberta July 2017
- **Selected Member** General Faculties Council, FGSR, University of Alberta Winter 2017