Fatemeh Fardno

ECE Ph.D. Student at UIUC

ffardno2@illinois.edu @
fatemeh-fardno in
+1 (708) 441-1770 📞
Champaign, Illinois 📍

EXPERIENCE

Software Engineer

Microchip Technology, FPGA BU

📅 Oct 2022 – Dec 2023   📍 Toronto, Canada

- Full-time SW engineer in Timing, Power & Device Data Group (TPP&DDM)
- Developed an XGBoost machine learning model to calculate subnet delays for post-synthesis netlists
- The XGBoost model achieves 5% maximum percentage error on the SPICE data, which is less than the 10% error achieved by numerical methods like AWE
- Helped with the enforcement of Microchip's software development processes
- Performed design reviews, unit testing, and code reviews

Graduate Thesis

Multi-Agent Systems Lab (MASLAB), University of Waterloo

📅 Sep 2020 – Sep 2022   📍 Waterloo, Canada

- Title: Fictitious Mean-field Reinforcement Learning for Distributed Load Balancing
- Load balancing problem in distributed heterogeneous systems using a game theoretic approach
- Mathematically proved the game becomes a Markov potential game (MPG) in the limit
- Developed a novel multi-agent reinforcement learning algorithm, improving over previous models which naively extended single-agent reinforcement learning algorithms to multi-agent settings by 307% on average and up to 1900%
- Implementied the multi-agent reinforcement algorithm in C++
- Empirically analyzed the convergence of our proposed algorithm to Nash equilibrium and study its performance

Research Intern

Distributed Systems Control Group, School of Electrical Engineering, Aalto University

📅 Jun 2019 – Sep 2019   📍 Espoo, Finland

- Worked on optimal sensor data scheduling for remote estimation over a time-varying channel
- Modeled the remote estimation problem as a POMDP and used Bayesian inference to approximately learn the channel statistics
- Developed and Implemented the optimal scheduling policy in MATLAB and compared the performance to previous works

Intern

Control Engineering Intern, Dana Control

📅 Jul 2018 – Sep 2018   📍 Tehran, Iran

- PLC programming and HMI screen designing intern

Research Assistant

Superconductor Electronics Research Laboratory (SERL), Sharif University of Technology

EDUCATION

Ph.D. in Electrical and Computer Engineering

University of Illinois Urbana Champaign
Supervisor: Dr. Seyed Rasoul Etesami

📅 2024 - 2027   📍 Champaign, Illinois

- GPA: 4.0/4.0

Master of Applied Science in Electrical and Computer Engineering – Systems and Control

University of Waterloo
Supervisor: Dr. Seyed Majid Zahedi

📅 2020 - 2022   📍 Waterloo, Canada

- **Thesis**: Fictitious Mean-field Reinforcement Learning for Distributed Load Balancing
- GPA: 3.8/4.0

Bachelor of Science in Electrical Engineering - Systems and Control

Sharif University of Technology
Supervisor: Dr. Mohammad Saleh Tavazoei

📅 2015 - 2019   📍 Tehran, Iran

- **Bachelor Thesis**: Distributed Formation Control of Multi-agent Systems using Complex Laplacian
- GPA: 3.87/4.0

AWARDS AND HONORS

- **International Master's Award of Excellence, University of Waterloo** — *2020*
- **Membership of National Elite Foundation, Sharif University of Technology** — *2015*
- **Ranked 64th among more than 180,000 participants, University Entrance Exam, Iran** — *2015*
- **3rd prize in the 15th Austrian Physicists' Tournament, Leoben, Austria** — *2013*
- **1st prize in the 5th Persian Physicists' Tournaments, Tehran, Iran** — *2012*

PUBLICATIONS

Power Scheduling of Sensor Transmission for Remote Estimation Over an Unknown Gilbert- Elliott Channel

Published on European Control Conference 2020

- Studying power scheduling of a sensor when transmitting over an unknown Gilbert-Eliott (GE) channel for remote state estimation
- Developing a novel optimal sensor scheduling algorithm

Beyond Theorems: A Counterexample to Potential Markov Game Criteria

Preprint

- A counterexample for an established Markov potential game criteria.

📅 Sep 2017 – Sep 2018   📍 Tehran, Iran

- Fabricating of Microfluidic chip for OOCYTE electrical properties measurement

STRENGTHS

- **Programming**   *Python, C/C++, OCaml, Matlab, Verilog, Ladder*
- **Operating Systems**   *Linux*
- **ML and AI**   *Natural Image Processing - Keras, TensorFlow, Sklearn, PyTorch, Scikit-learn*
- **Other Tools**   *Git, Xcode, Visual Studio, Anaconda Navigator, Jupiter lab, Pycharm, Microsoft Office*
- **Soft Skills**   *Teamwork, Problem solving, Critical thinking*

RELEVANT COURSEWORK

Statistical Reinforcement Learning, Random Process, Optimization, Data and Knowledge Modelling and Analysis, Neuroscience of Learning Memory and Cognition, Multi-variable Control Systems, Filtering and Control of Stochastic Linear Systems, Algorithmic Game Theory, Algorithm Design and Analysis

LANGUAGES

- English   *Full Professional Proficiency*
- Persian   *Native*