Aria Delshad

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Education

Sharif University of Technology (SUT) Tehran, Iran
Master of Science; Electrical Engineering – Control Engineering *Oct. 2021 – May. 2024*
Grade 16.19/20 - GPA: 3.5/4

Ferdowsi University of Mashhad (FUM) Mashhad, Iran
Bachelor of Science; Electrical Engineering – Control Engineering *Sep. 2017 – Sep. 2021*
Grade: 19.20/20 - GPA: 4/4

Kian High School Mashhad, Iran
Diploma of Mathematics and Physics *Sep. 2013 – Jun. 2017*
Grade: 19.82/20 - GPA: 4/4

Submitted Journal Paper (Under Review)

1. Aria Delshad and Maryam Babazadeh, "Distributed Actor-Critic Reinforcement Learning for Fixed-Time Consensus in Nonlinear Multi-Agent Systems". arXiv:2507.16520v1 [eess.SY], 2025. (Currently under review at IEEE Systems Journal)

Accepted Conference Papers

1. Nima Aberomand and Aria Delshad, "A Review of Machine Learning Techniques in Intrusion Detection Systems in Cloud Computing, Internet of Things and Wireless Sensor Networks", Paper accepted for presentation at 2nd International Conference on Mechanical, Electrical, Computer and Engineering Sciences, Monaco, France,(2020, December). (Link to Paper)

2. Nima Aberomand and Aria Delshad, "A Review of Spectral Clustering Approaches: Neural Network and Deep Learning" Paper accepted for presentation at 2nd International Conference on Mechanical, Electrical, Computer and Engineering Sciences, Monaco, France,(2020, December) (Link to Paper)

Research Experience

Graduate Researcher SUT, Tehran
Advisor: Prof. Maryam Babazadeh *Aug. 2022 – May. 2024*

Developed a distributed backstepping control strategy using reinforcement learning to achieve fixed-time consensus in high-order nonlinear multi-agent systems with uncertain dynamics. Designed control laws based on actor-critic networks and fixed-time stability analysis, ensuring all follower agents track the leader within a guaranteed fixed time regardless of initial conditions. Validated the approach through simulations demonstrating effective disturbance estimation and consensus error minimization.

Undergraduate Researcher FUM, Mashhad
Advisor: Prof. Seyed Kamal Hosseini Sani *Mar. 2021 – Sep. 2021*

Developed a smart thermostat as a BSc final project, enabling temperature and humidity control through a mobile application or an online website (IoT). This smart HVAC system provides online and remote monitoring capabilities, allows remote control and scheduling of the building's heating and cooling devices, and, most importantly, optimizes the temperature of the boiler and chiller based on environmental conditions inside and outside the building. The project demonstrated significant potential for improving energy efficiency and user comfort in residential and commercial environments.

Honors and Awards

Ranked 20 in the National University Entrance Exam for PhD Programs *2024*
Ranked 20th among approximately 26,000 participants in the nationwide Iranian University Entrance Exam for PhD programs.

Ranked 3rd Among Electrical Engineering Students - Master of Science (SUT) *2024*
Ranked 3rd among all electrical/control engineering students during Master's program at the Sharif University of Technology.

Awarded Sparkling Talent Quota - Direct MSc Admission to Top Iranian Universities *2021*
Selected for direct admission without entrance exam based on academic excellence by *Sharif University of Technology*, *University of Tehran*, *Amirkabir University of Technology*, and *K. N. Toosi University of Technology* to enter the Master's program without an entrance exam.

Ranked 3rd Among Electrical Engineering Students - Bachelor of Science (FUM) *2021*
Ranked 3rd among approximately 150 electrical engineering students during Bachelor's program at Ferdowsi University of Mashhad.

Top 1% National Ranking Achieved in University Entrance Exam (Konkur) *2017*
Ranked within the top 1% of approximately 150,000 participants in the nationwide Iranian University Entrance Exam.

Semi-Finalist in Iranian National Astronomy Olympiad *2015*

Semi-Finalist in Iranian National Physics Olympiad *2014*

Receive a diploma of honor in 10th International Junior Science Olympiad (IJSO) - India *2013*
Awarded for outstanding performance in physics, chemistry, and biology in the 10th International Junior Science Olympiad competition for young students. IJSO is an annual individual and team competition in the natural sciences, designed for secondary school students from around the world. The competition focuses on physics, chemistry, and biology, testing both theoretical knowledge and practical skills. IJSO serves as a prestigious platform for young students to showcase their scientific talents, develop their skills, and engage in international scientific collaboration.

Semi-Finalist in Iranian National Informatics Olympiad *2013*

Teaching Experience

Fundamentals of Electrical Engineering 2 SUT, Tehran
Teaching Assistant *Oct 2023 – Jan 2024*

Held classes and conducted tutorials for solving homework assignments and graded homework assignments. Course taught by Dr. Arman Vasighzadeh. (Electrical Machines, Power Systems)

Fundamentals of Electrical Engineering 1 SUT, Tehran
Teaching Assistant *Oct 2023 – Jan 2024*

Prepared homework assignments and quizzes, Held classes for solving homework assignments and graded homework assignments, quizzes and midterm exam. Course taught by Dr. Amir Basiri.

Computer Programming (C, C++, and Visual C++) FUM, Mashhad
Teaching Assistant *Oct 2018 – Jan 2019*

Held classes for solving homework assignments, graded homework and exams.Course taught by Prof. Mahdi Saadatmand.

Physics Olympiad Besat high school, Mashhad
Teacher *Jul 2017 – Mar 2018*

Work Experience

Azaran Khaf, Iran

Intern *Jul. 2022 – Sep. 2022*

Assisted in the overhaul and maintenance of panels, transformers, and other high-voltage equipment at Opal Parsian company in Sangan Khaf, contributing to reliable operation and compliance with safety standards.

Sepehr Azarakhsh Bihamta Mashhad, Iran

Intern *Jul. 2021 – Sep. 2021*

Assisted and participated in the installation, testing, and commissioning of a 132 kV GIS underground substation project. Gained hands-on experience with high-voltage equipment, system integration, and quality assurance procedures throughout the project lifecycle.

Azaran Khaf, Iran

Intern *Jul. 2020 – Sep. 2020*

Assisted in the repair, transportation, installation, testing, and commissioning of dry-type transformers as part of a power substation project, contributing to system reliability and operational readiness.

Projects

Research Projects

- **Control and Stabilization of Non-holonomic Dynamic Systems: Mobile Manipulator Robot**
- **LED Chip Visual Servo Positioning Control Under Variable System Parameters Using Adaptive Dual Rate Kalman Filter with Adaptive Recursive Least Squares**
- **Identifying dynamic systems using the least squares estimation method, utilizing Orthogonal Least Squares (OLS) and Singular Value Decomposition (SVD)**
- **Optimal control of nonlinear systems, using observer (Kalman filter) and LQR for a nonlinear steam furnace system**
- **Ambulance Location Under Stochastic Demand**
- **Designed and implemented a PID controller for a direct rolling tension control system with inherent delay, improving system stability and performance**
- **Markov Chain Modeling for COVID-19 Epidemic**
- **Ambulance Location Under Stochastic Demand**
- **Simulation and design of a photovoltaic solar power plant with PVsyst**
- **Design and Fuzzy Logic-Based Tuning of PID Controller Coefficients**
- **Implemented and compared metaheuristic optimization algorithms (Bees Algorithm, Antlion Optimizer, Firefly Algorithm, Artificial Bee Colony) for solving complex optimization problems**
- **Designed and implemented a model reference adaptive controller (MRAC) for precise position control of a DC motor using an Arduino board.**
- **Design of an optimal feedback controller for nonlinear systems with continuous genetic algorithms and PSO for DC motor speed control, inverted pendulum control and stabilization, inventory control and balancing, and cash inventory management**
- **Design of LQR Optimal Feedback Controller with Neural Networks for a Ball Magnetic Levitation or Suspension System**

Digital and Analog Electronics

- **Universal Motor Speed Control Circuit**
- **100W Class-A Audio Amplifier**
- **Class-D Audio Amplifier**
- **1-30 Volt / 0-3 Amp DC Bench Power Supply**
- **Designed and implemented a DC motor control system for a hoist using an AVR microcontroller, including motor start-up, speed control, and safety features.**

Programming

- **Developed a Space Shooter game using Unreal Engine 4, implementing core gameplay mechanics, UI, and enemy AI.**
- **Object detection and identification with neural networks in MATLAB.**
- **Designing and training a neural network for voice command recognition in MATLAB.**
- **Developed a C++ program to solve the Traveling Salesman Problem using genetic algorithms, optimizing route efficiency and demonstrating heuristic search techniques.**
- **Engineering calculator program with C++.**

Relevant Coursework

*Graduate course

- Optimal Control*
- Nonlinear Control*
- Adaptive Control*
- Convex Optimization 2*
- System Identification*
- Advanced Engineering Math*
- Neural Networks*
- Advanced Control Systems
- Digital and Nonlinear Control Systems
- Linear Algebra
- Industrial Control
- Instrumentation and Components of Industrial Control Systems
- Linear Systems and Controls

Research Interests

- Reinforcement Learning
- Optimal and Distributed Control
- Nonlinear Control
- Convex Optimization
- Internet of Things (IoT)
- Multi-Agent Systems

Skills

Programming Languages: MATLAB/Simulink, C/C++, Python
Software and Tools:

- MATLAB
- LabVIEW
- Visual Studio Code
- Proteus
- Logisim
- LaTeX
- Altium Designer
- PSIM
- OrCAD PSpice
- Fritzing
- Arduino / Arduino IDE
- Raspberry Pi
- Blender
- AutoCAD
- CorelDRAW
- EES
- PVsyst
- Siemens TIA Portal

Miscellaneous: Soldering (Through-Hole and Surface Mount Technologies); Experience in video, audio, and image editing

Languages

Persian: Native
English: Proficient (CEFR C1)
German: Elementary Proficiency
Arabic: Basic

Certificates and Workshops

Advanced MATLAB Programming Certificate *Jan. 2021*
College of Ferdowsi University of Mashhad

Introduction to Programming with MATLAB Certificate *Nov. 2020*
College of Ferdowsi University of Mashhad

Altium Designer PCB Design Certificate *Jul. 2019*
College of Ferdowsi University of Mashhad

Solar Photovoltaic Power Plants Basics Certificate *Jul. 2019*
College of Ferdowsi University of Mashhad

Research and Essay Writing Methods Workshop *Feb. 2019*
Ferdowsi University of Mashhad - Society of Physics Students

Understanding and Learning Complex English Sentences Workshop *Feb. 2018*
College of Ferdowsi University of Mashhad

Electric Motor Start-up and Control & Electrical Energy Distribution Systems *Oct. 2018*
Bameshki and Rezaee Education Department

C++ Programming Basics *Aug. 2017*
Iran Technical and Vocational Educational Organization

References

Dr. Maryam Babazadeh
Associate Professor, Department of Electrical Engineering
Sharif University of Technology
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Relationship: Thesis Supervisor

Dr. Seyed Kamal Hosseini Sani
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Ferdowsi University of Mashhad
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Relationship: Course Instructor

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Relationship: Course Instructor