Masoud Ataei

masoud.ataei@maine.edu | 2073075804 | linkedin.com/in/masoud-ataei | ataei67.github.io | Orono, Maine

Education

PhD in Electrical and Computer Engineering, *University of Maine* – Orono, ME 2022-Current

- **Dissertation topic:** Bayesian Learning for Safe Control, GPA: 4/4
- **Relevant Courses:** Mobile Robotics, Neural Network, Deep Learning.

Master of Science in Electrical Engineering, *Amirkabir University of Technology* – Tehran, Iran 2011-2013

- **Dissertation topic:** Simulation of ZnO Nanowire BioFETs

Bachelor of Science in Electrical Engineering, *Yazd University* – Yazd, Iran 2007-2011

- **Dissertation topic:** Real-Time processing with a high speed ADC

Skills

- **Robotics:** ROS, Gazebo, PyBullet, RTab-Map, Arduino.
- **Programming languages:** Python, C, C++, Java, Visual C#, Visual Basic, SQL, Android.
- **Hardware languages:** Verilog, Assembly, programming on OS-9 and ElinOS, FreeRTOS.
- **Electronic Design:** PSpice, SystemVerilog, ModelSim, Proteus, Protel DXP, LabVIEW, STM32CubeMX, TouchGFX.
- **Embeded Development:** Codevision, Iar, Keil, STM32IDE.
- **Scientific Software:** MATLAB (M-file and Simulink), COMSOL Multiphysics, LEDIT, Cadence(layout design), HSpice, SIESTA, SG Framework.
- **Hardware skills:** ARM Cortex, AVR, PIC, MSP430, MEN CPU, EKF CPU, design embedded systems, PLC.
- **Protocols & Communication:** Modbus, S-Protocol, l-Protocol, UART, RS485, RS232, GPRS, I2C, SPI.
- **General Software:** Microsoft Office Suite (Word, PowerPoint, Excel, Visio, Access), Windows, Linux.

Research Interest

- **Robotics:** Safe control, localization, mapping, and navigation
- **Artificial Intelligence and Machine Learning:** AI-driven solutions, data visualization, data processing, and image and audio processing.
- **Embedded systems:** Hardware and software programming for embedded applications.
- **Semiconductor Technology:** Fabrication, design, and simulation of semiconductor structures and biosensors.

Research and Academic Experiences

Research Assistance, University of Maine – Orono, ME 2022-Current

- **Project 1:** Developed and analyzed uncertainty quantification techniques for Bayesian and probabilistic models, integrating a control barrier function (CBF) to ensure safe operations of ground vehicles.
- **Project 2:** Designed goal navigation and state estimation model using Spatial Transformation Networks.
- **Project 3:** Explored safe reinforcement learning in realistic simulation environments.
- **Project 4:** Applied genetic algorithm to identify the largest circles in complex maps for spatial optimization.
- **Project 5:** Enhanced robot positioning systems to improve safe control capabilities.
- **Project 6:** Optimized a fall-detection model for ground robots to identify and report fallen individuals during periodic inspections.
- **Project 7:** Conducted distance-aware worst-case analysis for spline-based neural networks.
- **Project 8:** Implemented simultaneous localization and mapping (SLAM) for autonomous navigation tasks.

Volunteer Researcher, CompuMAINE, University of Maine – Orono, Maine 2021-2022

- Conducted statistical analysis of 3D chromosome territories, contributing to genomic research.

VLSI Course Project, Amirkabir University of Technology – Tehran, Iran 2014
- Designed, simulated, and post-simulated a custom I2C IC using Cadence tools, including circuit, layout, and post-layout verification.

Instructure, University of Seyyed Jamaleddin Asadabadi – Asadabad, Hamedan, Iran 2015
- Taught courses on computer system architecture to two student groups.

Teaching Assistant, Electronics I – Amirkabir University, Tehran, Iran 2012-2013

Industrial Experiences

Electronics and Hardware Developer, Shokat – Tehran, Iran 2017-2019
- Designed and developed electronic boards for smart heaters, facilitating the production and sale of approximately 20,000 units.

Electronics and Hardware Developer, KTC – Tehran, Iran 2014-2018
- Developed and tested electronic boards for Oil-Gas and power station control and monitoring systems, including AIOH, DIO, RTD, and DITT cards.
- Enhanced DCS and SCADA software by optimizing performance, adding hardware health logs, and integrating HART commands.
- Developed and tested a three-phase energy meter for industrial applications.

Software and Hardware Developer, IRMFC – Tehran, Iran 2014-2019
- Engineered and led manufacturing of custom-designed gas process unit laboratories featuring MFCs, back-pressure controllers, transmitters, and sensors for industrial use.

Hardware Designer, ITS – Tehran, Iran 2012-2019
- Designed and produced DC motor controllers and brushless motor controller boards for medical saws and drills.

Hardware Designer, Yazd University (Arsen Group) – Yazd, Iran 2012
- Designed electrical circuits for a hybrid vehicle competing in the Iranian Machine Design competition.

Conferences and Publications

- "*DAREK - Distance Aware Error for Kolmogorov networks*", **M Ataei**, MJ Khojasteh, V Dhiman, *ICASSP*, 2025, Accepted.
- "*DADEE: Well-calibrated uncertainty quantification in neural networks for barriers-based robot safety*", **M Ataei**, V Dhiman, *arXiv*, 2024, preprint arXiv:2407.00616.
- "*Omobot: a low-cost mobile robot for autonomous search and fall detection*", SU Ahamad, **M Ataei**, V Devabhaktuni, V Dhiman, *IEEE International Conference on Advanced Intelligent Mechatronics*, 2024, (IEEE ICAIM Boston2024).
- "*Opto-Electronic Mixer*", H Kaatuzian, HD Nayeri, **M Ataei**, A Zandi, *Journal of Semiconductors*, 2013.
- "*Analysis of quantum well size alteration effects on slow light device based on excitonic population oscillation*", H Kaatuzian, H Shokri Kojori, A Zandi, **M Ataei**, *Optical and Quantum Electronics*, 2013, 45, 947-95911.
- "*Structural parameters improvement of an integrated HBT in a cascode configuration opto-electronic mixer*", H Kaatuzian, HD Nayeri, **M Ataei**, A Zandi, *Journal of Semiconductors*, 2013, 34 (9), 094001.
- "*Bayesian Learning for Safe Control*", **M Ataei**, V Dhiman, *AI in Maine*, 2023, The Toux Institute in Portland, Maine, (poster presentation).
- "*Electron states in graphene nano-disks*", MJ Sharifi, M Ahmadian, **M Ataei**, *5th Iranian Conference on Electrical Engineering (ICEE)*, 2017, 233-237.
- "*In-plane Heterostructure of G-BN: A first-principle study*", **M Ataei**, MJ Sharifi, *7th National Conference on Nanotechnology from Theory to Application (NCNTA)*, 2019, Tehran, Iran (poster presentation).
- "*Simulation and Analysis of ZnO Nanowire BioFETs*", **M Ataei**, M Khatami, *5th ICNS*, 2014, Kish Island, Iran (poster presentation).

Volunteer Reviewer

International Conference on Acoustics, Speech, and Signal Processing **(ICASSP)**	2025
IEEE International Conference on Robotics and Automation **(ICRA)**	2024 - 2025
IEEE Robotics and Automation Letters **(IEEE RA-L)**	2024 - 2025
IEEE/RSJ International Conference on Intelligent Robots and Systems **(IROS)**	2023 - 2024

Hobbies

- Exploring and learning new concepts and technologies quickly.
- Conducting research and solving complex problems.
- Collaborating with teams and fostering cooperation.
- Walking, enjoying cinema and listening to music.
- Reading books across various genres.