# Amir Mehdi Soufi Enayati

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## Summary

AI and Robotics Engineer (Ph.D., Robotics) with expertise in reinforcement learning, generative models, and intelligent control for industrial systems. Experienced in developing and deploying ML-based decision-making frameworks, Sim2Real transfer, and advanced model-based control. Strong background in Python software development, robotic simulation, and system integration. Passionate about bringing AI innovation into real-world automation and process control. Permanent Resident of Canada; open to relocation.

## Skills

**AI & Machine Learning:** Reinforcement Learning (Model-free, Meta, Safe, Sim2Real), Generative Models (Transformers, Diffusion, GFlowNets, VAEs), Representation Learning

**Software Tools:** Python (PyTorch, NumPy/SciPy, Hugging Face), MATLAB/Simulink, C++, Git, Docker

**Robotics:** Simulation (PyBullet, IsaacGym, MuJoCo, MATLAB/Simulink), Manipulation (Path Planning, Kinematics/Dynamics), Low-level Control (Hydraulic, DC), ROS

**Control & Automation:** NI LabVIEW, PLC/HMI (Siemens TIA Portal), DAQ

**Soft Skills:** Cross-disciplinary teamwork, Technical Reporting, Mentorship, Design Review, International Collaboration

**Languages:** English (Fluent), French (B1), Persian (Native)

## Experience

**Postdoctoral Research Fellow** ON, Canada (Oct. 2025 – Present)
*SickKids Research Institute (Molecular Medicine Program)*

- Applying reinforcement learning techniques in generative models to problems in molecular medicine, including discovery, uncertainty-aware evaluation, and multi-fidelity surrogate models.
- Collaborating with chemists and computer scientists; mentoring junior trainees on ML workflows and reproducible research practices.

**Research Assistant | Co-instructor | Teaching Assistant** BC, Canada (Sep. 2020 - Sep. 2025)
*University of Victoria & UBC Okanagan (Advanced Control & Intelligent Systems Lab)*

- Developed and deployed RL-based control algorithms for real and simulated robotic manipulators
- Notable Projects:
  - Context representation in meta-RL with Transformer encoder-decoder (Work in progress)
  - Hybrid diffusion model for adaptive cross-morphology path planning (Work in progress)
  - Human-aligned motion generation with dynamic motion primitives (IEEE TRO)
  - Sim2Real pipeline with time-stochastic real-time simulation, robust to dynamic variations (IEEE TAI)
  - Safe RL (IROS), High-fidelity Industrial Digital Twin (IEEE RAL)
- Co-instructed graduate-level Applied ML for Mechanical engineering, and TAed for multiple undergrad courses.

**Project Lead | Mechanical & Automation Engineer** Tehran, Iran (Mar. 2016 – Mar. 2020)
*Durali System Design & Automation (DSDA Co.)*

- DSDA is a multidisciplinary engineering firm specializing in custom automated machinery and control systems. I contributed to the design and integration of electromechanical subsystems from concept to commissioning.
- Notable Projects:
  - City Theater of Tehran & Orumieh Theater Machinery (Lead Mechanical Design)
  - Heavy-Payload Hydraulic 6-DOF Motion Simulator (Mechanical Engineer, Team Lead)
  - Acoustic Robotic System for Performance Halls (Mechanical Design Engineer)
  - Hydropower Plant Mechanical Governor Test Procedure (Automation Engineer)
  - Testbench for Hydropower Plant Mechanical Safety Device (Mechanical Engineer)

**Mechanical Engineer, Intern** Tehran, Iran (May 2015 – Dec. 2015)
*S. Rezaei Research Center (SRRC)*

- Member of an undergraduate team supervised by the research center, contributing to designing and building an electric motorcycle for the *5th Iranian Machine Design Competition*, winning the Best Design Award.

## Patents

**US Patent No. 2024/0003264 A1, Testing mechanical overspeed protection systems**
M. Durali, M. H. Heydari, *A. M. S. Enayati*, S. M. Hosseini, 2024.

**US Patent No. 2019/0292774 A1, Controlling acoustics of a performance space**
M. Durali, M. A. Soleimani, F. F. Shabani, A. Habibollahi, A. Sohbatloo, *A. M. S. Enayati*, 2019.

## Education

**Ph.D. Mechanical Engineering (Robotics)** University of Victoria, BC, Canada (2020–2025)

- RL Sample-efficiency, Sim2Real, and Generalizability for Robot Manipulation

**M.Sc. Mechanical Engineering (Control Systems)** Sharif University of Tech, Iran (2016–2018)

- Optimal Kinematics and Robust Control of Hydraulic Parallel Manipulator

**B.Sc. Mechanical Engineering** Sharif University of Tech, Iran (2012–2016)

- Design and Manufacturing of an Electromechanical Testbench

## Honors & Awards

**Faculty of Graduate Studies Scholarship** University of Victoria (2021)
**Graduate Deans Entrance Scholarship** University of British Columbia (2020)
**Best Master Thesis Award for Technical Contributions** Sharif University of Tech (2018)
**Best Electric Motorbike Design** 5th Iranian Machine Design Contest (2015)
**Member of Iran's National Elites Foundation** Iranian National Elites Foundation (2012)
**Rank 10th in Physics & Mathematics** National University Entrance Exam (2012)
**Silver Medalist** IPhO: Iran Physics Olympiad (2011)

## References

**Available upon request.**