Ali A. Noghabi

a.noghabi2002@gmail.com ali-noghabi.github.io linkedin.com/in/ali-noghabi
github.com/Ali-Noghabi

Research Interests

- Robotics
- Internet of Things
- Reinforcement Learning
- Federated Learning

Education

Amirkabir University of Technology (Tehran Polytechnique) *2020 - Present*
BS in Computer Science
GPA: 18.04 / 20 (3.78 / 4)

Experience

Purdue University *Undergraduate Research Assistant* *Jun 2024 - Present*
I'm working on adversarial attacks for quadrupeds under the supervision of Prof. Kaur. Responsible for creating a comprehensive dataset of quadruped robot trajectories under various conditions and developing a real-time system to detect abnormal behaviors or potential attacks *link*

Amirkabir University *Undergraduate Research Assistant* *Apr 2024 - Present*
Working at NORC Research Center under Prof. Ghatee's supervision on a Fruit Ripening Monitoring and Prediction System. Responsible for data collection using Arduino, VOC gas, and temperature/humidity sensors to create a dataset labeled with Brix values (sugar content). Applying time-series prediction algorithms to accurately forecast fruit ripening stages. *link*

Datall *Software/IoT Engineer* *May 2021 - Jun 2024*
Datall is a startup founded by alumni of Sharif University of Technology and affiliated with the Sharif Energy, Water, and Environment Institute, specializing in predictive maintenance and condition monitoring solutions for rotating equipment. As a member of the software team, my key contributions involved developing an IoT gateway, designing a real-time data processing pipeline, and creating a monitoring dashboard for live visualization of sensor data.

Teaching Experience

Artificial Intelligence, Dr. Ghatee *Spring 2024*
Advanced Programming, Dr. Ghatee *Spring 2024*
Data Structures & Algorithms , Dr. Dolati *Fall 2024*
Database & Workshop, Dr. Goodarzi *Fall 2023*
Fundamentals of Programming, Dr. Rahmati *Fall 2023*
Fundamentals of Programming, Dr. Salari *Fall 2022*

Selected Projects

Robotic Projects *link*
Developed **ROS** packages for robotic simulations, including quadruped gait analysis in **PyBullet**, automated shape drawing in **TurtleSim**, and joystick-controlled quadruped simulation in **Gazebo**. Gained hands-on experience in **RViz**, **URDF modeling**, and PyBullet.

RL Projects *link*
Built reinforcement learning (RL) environments using **OpenAI Gymnasium**, training agents with **PPO** in **Stable Baselines3** and **Ray RLlib**. Developed action masking, reward functions, and GUI/CLI interfaces.

Arduino Projects *link*
Acquired skills in **Arduino programming**, working with **NodeMCU microcontroller** and integrating a wide range of modules for web interfaces and real-time data processing.

Jupyter Notebooks *link*
Developed ML, data analysis, and AI algorithms, including PCA, LDA, KMeans, DBSCAN, SVM, Expectiminimax, Genetic Algorithms, CSP, and UKF, with a focus on optimization, reinforcement learning, and federated learning.

C++ Projects *link*
Gained expertise in network programming (UDP, OPC UA, sockets), multithreading, OpenGL, ELG, file systems, and compiler design.

QR Factorization *link*
Implemented parallel and serial QR factorization using **MPI**, **OpenMP**, and **Eigen**, applying Householder and Gram-Schmidt algorithms.

Related Courses

Design & Analysis of Algorithms 18.5 | Data Structures & Algorithms 17.5 | Advanced Programming 19.2 | Artificial Intelligence 19.08 | Data Mining 18.29 | Linear Optimization (ongoing) | Numerical Linear Algebra 20 | Principles of Operating Systems 19.75 | Computer Networks 19.5 | Compiler 19 | Cryptography* 18.25

All grades are out of 20

Online Courses

Reinforcement Learning, Steve Brunton, University of Washington
Control Theory & Data-Driven Control, Steve Brunton, University of Washington
Physics Informed Machine Learning, Steve Brunton, University of Washington

Technical Skills

- **Languages** C++, Python, C, JavaScripts, Java
- **Robotics** ROS, NVIDIA Isaac, Gazebo, RasPi
- **RL** OpenAI Gym, Stable-Baselines3, MuJoCo
- **IoT** Arduino, MQTT, Fritzin
- **AI** PyTorch, OpenCV, Numpy, Pandas, Matplotlib
- **Tools** Git, Qt, OpenGL

Voluntary Activities

DAI-DAY Contributed as a technical team member for Amirkabir Data Mining and Artificial Intelligence Day (DAI-DAY) in 2024 and 2025, chaired by Prof. Ghatee. *link*
Git Workshop Hosted Git workshops in 2023 and 2024 for over 100 participants, with a hands-on project to build practical skills. *link*

Honors & Awards

Ranked among the **top 1%** between all applicants in the University Entrance Nationwide Exam known as Konkur (approximately 150,000 applicants). *Sep 2020*

Languages

- **Farsi** native
- **English** Full Proficiency, scheduled for TOEFL exam on 9th November 2024

References

Prof. Kaur kauru@purdue.edu
Assistant Professor, Agricultural and Biological Engineering Department, Purdue University

Prof. Ghatee ghatee@aut.ac.ir
Full Professor, Computer Science Department, Amirkabir University

Prof. Sheikhi asheikhi@sharif.edu
Assistant Professor, Electrical Engineering Department, Sharif University

* indicates graduate courses