Arya **Parvizi**

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Education

Master of Computer Science — *Fredericton, NB, Canada*
UNIVERSITY OF NEW BRUNSWICK

Bachelor of Computer Engineering — *Tehran, Iran*
SHAHID BEHESHTI UNIVERSITY

Experience

RESEARCH ASSISTANT — *UNB, Fredericton, Canada*
Human-Robot Interaction Laboratory — University of New Brunswick — *September 2023 - Present (2 years)*

- Designed and implemented teleoperation interfaces and control systems using ROS + Python (Tkinter, MVC) to improve responsiveness and human-robot collaboration.
- Conducted hardware diagnostics and sensing calibration on Clearpath's Jackal robot (MCU/User Power Board, VBAT continuity, signal integrity).
- Simulated and evaluated robotic task performance, analyzing latency, control precision, and sensor feedback quality.
- Developed data pipelines for sensor fusion and real-time performance monitoring.
- Collaborated on empathetic robot design and autonomous behavior research to enhance operator safety and trust.
- visit `https://github.com/cserobotic` for more info.

TEAM LEAD — *SBU, Tehran, Iran*
Robotics Laboratory — R3SBU Team — *September 2021 - August 2023 (2 years)*

- Led a 9-member interdisciplinary robotics team developing autonomous and semi-autonomous robots (RoboCup 2D, quadcopter, SBU omni-robot, and Humanoid NAO).
- Designed simulation and testing frameworks for robot motion and vision system evaluation.
- Integrated sensor data, motion planning, and control algorithms across C++ and Python environments.
- Managed Git workflows, documentation, and milestone delivery across multiple concurrent projects.
- Built and maintained a semi-automated CI/CD-style validation pipeline, performing statistical analyses on sparse datasets to generate actionable QA reports.
- Secured sponsorship from Divar grant to support lab research and competitions.
- Visit `https://github.com/cserobotic` for more info.

ROBOTICS ENGINEER INTERN — *SBU, Tehran, Iran*
Robotics Laboratory — R3SBU Team — *May 2021 - September 2021 (5 months)*

- Developed and tested autonomous navigation algorithms (BUG1/BUG2, SLAM) using Webots and ROS.
- Improved sonar-based obstacle detection (corner-miss issue) via semi-circular sweep motion; compared against sensor-swap and decoupled-panel alternatives for accuracy and energy.
- Modeled robotic systems in simulation for collision detection and motion validation.
- Set up ROS 2 platform and packages; worked with networking, nodes, and launch configs.
- Fixed Webots 3D model issues (URDF/PROTO) on the SBU omni-directional robot to resolve dynamic-motion failures.
- Visit `https://ph504.github.io/projects/projects-4/` for more info.

GAME DEVELOPER INTERN — *Tehran, Iran*
Concealand Game Studio — *January - August 2023*

- Applied Reinforcement Learning for Procedural Animation of a humanoid character to significantly reduce the animation state complexity and workload for artists.
- Tuned PyTorch training pipelines to reduce GPU usage and improve convergence time.
- Worked with Unity IK frameworks, animation rigging package, and Unity ML model training

Honors and Awards

RoboCup 2024 International Competitions, Soccer Simulation 2D League
Ranked 5th — as a Member of R2D2 Team *Summer - 2024*

Scholarship from School of Graduate Studies, University of New Brunswick
Board of Governors Merit Awards for Graduate Studies *Fall - 2023*

Granted Facilities from the National Elites Foundation, Iran
As a winner of an Elite Competitive Event (RoboCup IranOpen2023) *Summer - 2024*

RoboCup IranOpen2023 International Competitions, Soccer Simulation 2D League
Ranked 3rd — as a Member of R3CESBU Team *Spring - 2023*

ROBOIUT2021, Webots' E-puck Line Follower league, Isfahan university of technology
Ranked 1st *Fall - 2021*

Skills

- **Languages** : Python, C/C++, MATLAB, Java, Javascript
- **Frameworks** : PyTorch, TensorFlow, OpenCV, ROS, ROS2, Node.JS, React, Bootstrap
- **Simulation & Robotics** : Webots, Gazebo, Clearpath Jackal, SLAM, Motion Planning, Sensor Fusion, PID Control
- **Hardware & Control** : Embedded Systems, Sensors & Actuators, Microcontrollers, Vision Systems, System Diagnostics
- **Databases** : MySQL, PostgreSQL, Redis, Pandas, Apache Hive, Apache Hadoop
- **Misc.** : Docker, GIT, Linux, Unity, Simulation Prototyping, CAD Familiarity, SOP Creation, Network Diagramming

Languages

- **English** : Fluent (IELTS 7.5)
- **Persian** : Native
- **Japanese** : Intermediate

Publications

Generating Hand-Written Symbols With Trajectory Planning Using A Robotic Arm
2023 13th International Conference on Computer and Knowledge Engineering (ICCKE) *27 Nov 2023*

R3CESBU Soccer Simulation 2D Team Description Paper 2023
Team Description Paper for RoboCup 2023 *27 Nov 2023*

Independent Projects

- **A Serious VR Game to Overcome Arachnophobia, Using Unity and MetaQuest3**
- **An Implementation of a 2D Soccer Platform, and NEAT Algorithm to Train AI Using Unity C#**
- **A Clone of Feed and Grow Game, A Platform to train NEAT Algorithm Using Unity C#**
- **A Clone of Hollow Knight Game, Using Unity**
- **A Clone of Stick Hero Game, Using C++ SDL Library**
- **Spaceship Adventure Game, Using Unity C#**
- **Dummy Paradox — GMTK 2025 GameJam Prototype (Themed Loop)**

Curricular Projects

- **Wall Following and Path Finding Using BUG1 and BUG2 Algorithms for E-Puck Robot in Webots Simulator, Using Webots C++**
- **Heater/Cooler with Energy Consumption Modeling and Optimization Control System, Using Matlab**
- **Automated Scheduling and Course Selection for Students, Using Java, and CSP Algorithm**
- **Analysis and Optimization of the Shazam Algorithm in Music Recognition, Using Matlab**
- **Classification of Different Car Brand Models, Using CNNs and Webscraping with Keras**
- **Synthetic Summarized Titles From Indian News Reports, Using Python NLTK Based on Real-World Dataset from Kaggle**
- **Implementation and Analysis of Binary Index Trees for Historical Blockchain Databases, Using Java**
- **Comparing Relative Aim Control Schemes with Aim Assistance Techniques and Gyrosensor, Using Unity C#**
- **A Complete Implementation of Decaf Compiler, Using Java**
- **A Clone of Skype's Background Blurring on Webcams**

References

Available upon request