Arya Parvizi

Updated on January 26, 2025

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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

Human-Robot Interaction Laboratory — *UNB, Fredericton, Canada*
RESEARCH ASSISTANT — *September 2023 - Present*

Interface Design and User Experience: Applied UI/UX principles to teleoperation interfaces, enhancing user performance and experience. Developed and implemented automation for robot network configuration to streamline operations.
Research and Experimentation: Conducted research involving the gathering and analysis of empirical data. Designed scientific experiments adhering to computer science and psychology standard. Authored academic reports used in publications and presentations to disseminate findings.

Technical Development: Developed the teleoperation interface and robot operations using Python3, integrating ROS and Tkinter for functionality with proper modulation.

Algorithms Design and Analysis — *UNB, Fredericton, Canada*
TEACHING ASSISTANT — *January 2025 - Present*

Instructor: Huajie Zhang; Responsible for marking and reviewing assignments

Robotics Laboratory — *SBU, Tehran, Iran*
RESEARCH ASSOCIATE — *July 2021 - Present*

Applied Reinforcement Learning, and Data Mining principles to Soccer Simulation 2D League for RoboCup Competitions to analyze and improve team performance
Applied the same principles in addition to Obstacle avoidance, and Navigation algorithms to develop A.I. for SBU Omni-Directional Robot, and resolved sensor inaccuracies to enhance high-precision mapping capabilities.

Worked with C++, Pandas, TensorFlow, ROS, Webots, Docker, and Catkin

Human-Robot Interaction Laboratory — *UNB, Fredericton, Canada*
RESEARCH ASSOCIATE — *May - September 2024*

Technical Lead, co-author, designer, and conductor of the studies of underlying unconscious biases through interactions via avatars and teleoperated robots, in a professional setting.

Introduction to Game Development — *UNB, Fredericton, Canada*
TEACHING ASSISTANT — *January 2024 - April 2024*

Instructor: Daniel J. Rea; Responsible for marking and reviewing the lab assignments

Used Godot Engine.

Introduction to Robotics — *SBU, Tehran, Iran*
INSTRUCTOR — *June 2023 - August 2023*

Instructed for summer workshops, in order to recruit new passionate individuals for the lab.

Taught Fandamentals of Robotics, Machine Learning, A.I. Algorithms, and Simulation concepts

Concealand Game Studio — *SBU, Tehran, Iran*
GAME DEVELOPER INTERN — *February 2023 - April 2023*

Applied Reinforcement Learning, Imitation Learning, and Curriculum Learning for Procedural Content Generation (PCG, procedural animation for a humanoid character) to reduce the animation state complexity for artists.

Worked with Unity3D IK frameworks, animation rigging package, and ML model training, using the C# language.

Introduction to Algorithms Design — *SBU, Tehran, Iran*
TEACHING ASSISTANT — *September 2022 - December 2022*

Instructor: Ramak Ghavamizadeh; Responsible for teaching labs and designing lab assignment problemsets.

Used C++ and bash scripts to automate the test units for marking.

Introduction to Robotics — *SBU, Tehran, Iran*
INSTRUCTOR — *June 2022 - September 2022*

Instructed for summer workshops, in order to recruit new passionate individuals for the lab.

Taught Fandamentals of Robotics, Machine Learning, A.I. Algorithms, and Simulation concepts, using C++ and Python

NAO Research and Development Group

SBU, Tehran, Iran

ROBOTICS ENGINEER INTERN

July 2021 - September 2021

Responsible for Robot motion and A.I.
The project was implementing an autonomous control system for SBU omni-directional robot. Applied Localization and Mapping algorithms using ROS2 slam libraries with LIDAR sensors.
Applied using Python3.
Fixing the 3D Model in Webots which was causing a dynamic motion failure and getting familiar with robot 3D models, URDF and Proto, and the SBU omni-robot structure in Webots.

Setting Up the ROS2 platform for the robot and getting familiar with the ROS2 networking protocols, architectures and packaging.

Digital Logic Circuits

SBU, Tehran, Iran

TEACHING ASSISTANT

February 2019 - June 2019

Instructor: Hamidreza Mahdiani; Responsible for marking concept assignments.

Honors and Awards

RoboCup 2024 International Competitions, Soccer 2D Simulation 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 2D Simulation League
Ranked 3rd - as a Member of R3CESBU Team — *Spring - 2023*

The Best Bachelor Thesis Project
Nominee — *Summer - 2022*

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

Konkour, National University Entrance Exam
Tuition waived admission to Shahid Beheshti University - Ranked top 4% — *Fall - 2017*

Skills

Languages : Python, R, C/C++, Javascript **Frameworks** : Keras/Tensorflow, OpenCV, PyTorch, NLTK, Node.JS, React, Bootstrap **Databases** : Pandas, Redis, MySQL, PostgreSQL, Apache Hive, Apache Hadoop **Simulators** : Webots Simulator, Unity Game Engine, Robocup Soccer Simulator, Gazebo Robot Simulator, OpenAI Gym, **Knowledge** : Computer Vision, Machine Learning, Deep Learning, Reinforcement Learning, Simultaneous Localization and Mapping, Planning, Optimal Control, Evolutionary Algorithms **Operating Systems** : Windows, Ubuntu, Raspbian **Misc.** : Robot Operating System(ROS), GIT, Docker, CUDA

Research Interests

- Robotics and Autonomous Systems
- Reinforcement Learning
- Computer Vision
- Deep learning

Languages

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

Publications

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

R3CESBU Soccer Simulation 2D Team Description Paper 2023 [more info]
Team Description Paper for RoboCup 2023 — *27 Nov 2023*

Independent Projects

[github]
- A Serious VR Game to Overcome Arachnophobia, Using Unity C# and MetaQuest3
- A Clone of Feed and Grow Game, A Platform to train NEAT Algorithm Using Unity C#
- An Implementation of a 2D Soccer Platform, and NEAT Algorithm to Train AI Using Unity C#
- A Solution to Minesweeper Using Naiive Bayes and Logical Approach (Mineswiper), Application on Excel
- A Clone of Hollow Knight Game, Using Unity C#
- Intelligent Agent Tic-Tac-Toe Player, Using Java
- A Clone of Stick Hero Game, Using C++ SDL Library
- Spaceship Adventure Game, Using Unity C#

Curricular Projects

[github] • Likelihood Calculation with multiple ML Approaches for Student Success Based on Engineered Real-World Dataset
[github] • Generating Synthetic Summarized Titles From Indian News Reports, Using Python NLTK Based on Real-World Dataset from Kaggle
• Heater/Cooler with Energy Consumption Modeling and Optimization Control System, Using Matlab
[github] • Classification of Different Car Brand Models, Using CNNs and Webscraping with Python Keras
[github] • Simple Bitcoin Estimator Using Regression, Using Python Pandas and Numpy
[github] • Survivability Likelihood of Titanic Passengers Data Analysis, Using Python Based on Real-World Dataset
• Analysis and Optimization of the Shazam Algorithm in Music Recognition, Using Matlab
[github] • Implementation and Analysis of Binary Index Trees for Historical Blockchain Databases, Using Java
[github] • Comparing Relative Aim Control Schemes with Aim Assistance Techniques and Gyrosensor, Using Unity C#
[github] • E-Puck Robot Wall Following and Obstacle Avoidance, Using Webots Python
[github] • A Complete Implementation of Decaf Compiler, Using Java
[github] • A Clone of Skype's Background Blurring on Webcams
[github] • Parham Food: A Functioning Online Ordering Web Application
[github] • Eight Puzzle AI Solver Using BFS, DFS, A*, and IDA*, Using Java
[github] • Reactive Calculator, Using Javascript REACT
• Automated Scheduling and Course Selection for Students, Using Java
• Wall Following and Path Finding Using BUG1 and BUG2 Algorithms for E-Puck Robot in Webots Simulator, Using Webots C++
[github] • Multi-player Chess Platform Using JavaFX

References

Available upon request