Bijan Mehralizadeh

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Interest

System Engineering System Resiliency Internet of Things Cyber-physical System

Education

- **University of Tehran** — Tehran, Iran
  Master of Science - Mechatronics Engineering; GPA: 3.3/4.0 — *2017 - 2021*
  Courses: *Advanced Robotics (4.0/4.0), Artificial Intelligence (4.0/4.0), Digital Image Processing (4.0/4.0)*

- **Shahrood University of Technology** — Shahrood, Iran
  Bachelor of Science - Mechatronics Engineering; GPA: 3.0/4.0 (last two years) — *2012 - 2017*

Research Experience

- **Advanced Robotics and Intelligent Systems Lab** — University of Tehran
  Research Assistant (Supervisor: Hadi Moradi) — *2017 - 2023*
  - **Multi-modal autism screening system**: Design and develop a multi-modal system for assessing autism red flags in children automatically.
  - **Fully Robotic Social Environment**: Redesign & develop an automated robotic rehabilitation system for teaching and practicing affective interaction for children with ASD.
  - **Sensorized toy car**: Design and develop an Internet of Things toy for autism screening using multi-modal features.
  - **Robotic Social Environments**: Design & prototype a robotic platform for Autism therapy for children.

- **Lego Education Center** — Shahrood University of Technology
  Undergraduate Researcher — *2015 - 2017*
  - **Bench marking machine vision algorithms (Supervisor: Vahid Abolghasemi).**:
  - : -2pt Lego pick and place mobile robot Prototype and simulate a Lego Mindstorms EV3 pick and place mobile robot

Teaching & Mentoring Experience

- **Advanced Robotics and Intelligent Systems Lab** — University of Tehran
  Mentor — *2020 - 2021*
  - **Python programming instructor**: Python 101, Algorithms, Image Processing
  - **Robotic instructor**: Python 101, ROS 101, Linux 101

- **Advanced Robotics and Intelligent Systems Lab** — University of Tehran
  Teaching assistant — *2019 - 2020*
  - **Advance Robotics course TA**: ROS 101, Gazebo robot simulation, Simulate Anki VECTOR robot

- **Lego Education Center** — Shahrood University of Technology
  Mentor — *2015 - 2017*
  - **Python programming instructor**: Python 101, Image Processing
  - **Matlab programming instructor**: Matlab 101, Simulink
  - **Arduino programming instructor**: Arduino 101, IoT systems

Publications

- **Sustainability**: **Mehralizadeh, B.**; Baradaran, B.; Nikkhoo, S.; Soleiman, P.; Moradi, H. A Sensorized Toy Car for Autism Screening Using Multi-Modal Features. Sustainability 2023, 15, 7790. https://doi.org/10.3390/su15107790
- **Frontiers in Robotics and AI**: Soleiman P, Moradi H, **Mehralizadeh B**, Ameri H, Arriaga RI, Pouretemad HR, Baghbanzadeh N and Vahid LK (2023) Fully robotic social environment for teaching and practicing affective interaction: Case of teaching emotion recognition skills to children with autism spectrum disorder, a pilot study. Front. Robot. AI 10:1088582. doi: 10.3389/frobt.2023.1088582
- **ICSR conference**: Soleiman, P., Moradi, H., **Mehralizadeh, B.**, Azizi, N., Anjidani, F., Pouretemad, H. R., Arriaga, R. I. (2020, November). Robotic Social Environments: A Promising Platform for Autism Therapy. In: , et al. Social Robotics. ICSR 2020. Lecture Notes in Computer Science(), vol 12483. Springer, Cham. https://doi.org/10.1007/978-3-030-62056-1_20

Selected Projects

- **TBRD: the hand rehabilitation system (Control Systems, Embedded System, Sensor Fusion)**: Hand spasticity rehabilitation system for post stroke recovery.
- **Earthquake simulator (System Identification, Sensor Fusion)**: A small P-wave earthquake generator, closed-loop control system with a high accuracy vibration sensor.
- **Dot & Boxes agent (Reinforcement Learning, Expert System)**: A Q-learning agent for Dot&Boxes game, trained with an expert system, winner of campus AI competition.
- **The modular mobile robot (System Integration, Path Planning, Sensor Fusion)**: A 3D printed differential drive mobile robot for hand-eye coordination training for children with autism.
- **BAMS: the social robot platform (ROS, Signal Processing, Computer Vision)**: An open source inexpensive social robot platform for children with autism rehabilitation.

Skills Summary

- **Programming**: Python, C, C++, Matlab, Bash, Fortran
- **Frameworks**: ROS, Scikit, OpenCV, TensorFlow, Keras, Django, Flask
- **Tools**: GIT, Solidworks, AutoCAD, 3D print softwares
- **Platforms**: Linux, Arduino, Raspberry, Nvidia Jetson, STM32
- **Soft Skills**: Critical thinking, R&D team leadership, Systematic thinking
- **Language**: English (TOEFL iBT: 100), Farsi (Native)

Volunteer Experience

- **Brain's week exhibition** — Tehran, Iran
  Introduce the application of machine learning in autism screening — *November 2019*
- **Tehran annual digital art exhibition** — Tehran, Iran
  Introduce technology based autism systems for children with Autism. — *October 2018*

References

References available upon request