Bijan Mehralizadeh

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Interest

Complex Systems Cyber-physical System System Engineering Cyber Security Robotics

Education

- **University of Tehran** — Tehran, Iran
  Master of Science - Mechatronics Engineering; GPA: 3.54/4.0 — *2017 - 2021*
  Courses: *Robotics (4.0/4.0), Artificial Intelligence (4.0/4.0), Artificial Neural Network (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 - 2021*
  - **Multi-modal ASD screening system**: Design and develop a multi-modal Autism screening system for children.
  - **Fully Robotic Social Environment**: Redesign & develop an automated robotic rehabilitation system for teaching and practicing affective interaction for children with ASD.
  - **Intelligent toy car**: Design and develop an IoT device for ASD 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*
  - **Autonomous landing system for multi-rotors**: Develop & implement a computer vision auto landing algorithm (Supervisor: Vahid Abolghasemi).
  - **Lego pick and place mobile robot**: Prototype and simulate a Lego Mindstorms EV3 pick and place differential drive 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

- **ICSR conference 2020**: 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 International Conference on Social Robotics (pp. 232-245). Springer, Cham.
- **Under review**: **Mehralizadeh, B.**, Baradaran, B., Nikkhoo, S., Soleiman, P. Moradi, H. An Intelligent Toy Car for Autism Screening using Multi-Modal Features
- **Under review**: Soleiman, P., Moradi, H., **Mehralizadeh, B.**, Ameri, H., Baghbanzadeh, N., Pouretemad, H. R., Arriaga, R. I. Kashani, L. V. Fully Robotic Social Environment for Teaching and Practicing Aective Interaction: Case of teaching emotion recognition skill to children with Autism

Selected Projects

- **TBRD: the hand rehabilitation robot (Control Systems, Embedded System, Sensor Fusion)**: Hand spasticity rehabilitation robot for post stroke recovery.
- **Earthquake simulator (System Identification, Sensor Fusion)**: A small P-wave earthquake generator, closed loop control system with a high accuracy piezo 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 ASD.
- **BAMS: the social robot platform (ROS, Signal Processing, Computer Vision)**: An open source inexpensive social robot platform for children with ASD 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 (Proficient), Farsi (Native)

Volunteer Experience

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

References

- **Fariba Bahrami, Associate Professor at University of Tehran, School of ECE** — Project supervisor
  Email: mfbahrami@ut.ac.ir — *2019 - 2022*
- **Hadi Moradi, Associate Professor at University of Tehran, School of ECE** — M.S. advisor
  Email: moradih@ut.ac.ir — *2017 - 2021*
- **Vahid Abolghasemi, Assistant Professor at University of Essex, School of CSEE** — B.S. advisor
  Email: v.abolghasemi@essex.ac.uk — *2015 - 2017*