

Hamed Hamzeh

Curriculum Vitae

Tehran, Iran
☎ (+98) 9362998950
www.hamedhamzeh.github.io

Education

- 2019–2023 **B.Sc. in Mechanical Engineering**,
University of Tehran, Tehran, Iran, GPA: 16.13/20, last two years GPA: 3.59/4
B.Sc.'s Thesis, *Design and development of a whole body continuous passive motion (CPM) device for neurorehabilitation which was then manufactured by Teb V Sanaate Sharif company. Under the supervision of Dr. Daneshmehr (18.50/20)*

Research Interest

- Human Robot Interaction
- Robotics
- IOT
- ML & Computer vision
- Design and manufacturing
- Reinforcement learning

Publications

- Under Preparation **MCCRobo: The Modular Compliant and Efficient Magnetic Inspection Robot**
P Parhami, **H Hamzeh**, Salehpour M, Nasiri R and Moradi H

Experience

- Jul 2023 -present **Research assistant**, *Advanced Robotics and Intelligent Systems Lab*, School of Electrical and Computer Engineering, University of Tehran
Supervisor: Prof. Manouchehr Moradisabzevar
Hand Puppeteer Robot: Visit webpage
 - Engineered a 3D-printed robot, integrating design and coding for interactive movement.
 - Collaborated on the development of a YOLO v8 pose detection model to track puppet movements.
 - Synced the pose detection model with the robot for remote-controlled movement.
 - Programmed NodeMCU and Arduino to process real-time data from a gyroscopic sensor for robotic control.**Silkworm Robot:** Visit webpage
 - Developed a semi-soft robotic system for efficient movement on metallic surfaces, aimed at inspection and maintenance applications.
 - Designed and 3D-printed components using PLA and TPU, with additional parts made from Plexi.
 - Developed a web app for remote control and monitoring via ESP32 microcontrollers.
 - Achieved a 7% increase in energy efficiency through experiments with variable module speeds.
- Jan - June 2022 **Junior Front-End Developer**
GANJE, a startup in the field of smart logistics
 - Developed a web interface for Ganje Lockers using HTML, CSS, JavaScript, and React.
 - Collaborated with the frontend and backend teams to ensure seamless integration of the web interface.
- Jul 2021 - Jan 2022 **Mechanical Engineer**
GANJE, a startup in the field of smart logistics
 - Collaborated with a team to design and manufacture smart lockers using sheet metal.
 - Developed innovative solutions for optimizing lockers' functionality and user experience.
 - Utilized a top-down design approach to efficiently manage complex assemblies.
- Jun - Oct 2021 **Internship**
Avita Company
 - Collaborated with a team to design and manufacture wheelchairs using carbon fibers.
 - Assisted in the manufacturing process, creating fixtures to enhance the assembling process.
- Feb2020 - May2021 **Teacher Assistant**
Nokhbegan High School
 - Assisted lead teachers in teaching physics and mathematics to students.
 - Conducted review sessions to answer questions and solve challenging problems for students.

Honors & Rewards

- 2024 **Privilege Of Studying MSC:** Technical university of Milan, Automation and Control Engineering, Engineering Faculty
- 2024 **Winner of the third national competition held by Iran's National Elites Foundation For the project entitled:** Research and development of machine learning model, capable of detecting and proposing the proper hydrogen adsorbent
- 2018 Ranked within the top 0.5% students amongst more than 160000 participants in Iranian University Entrance Exam (Konkur)

Selected Projects

Predicting Hydrogen Storage in MOFs, *Visit GitHub Repo*

- Data preprocessing, feature selection, and visualization to enhance model input.
- Trained different tree-based models and neural networks, with hyperparameter optimization using Optuna.

Pediatric Bone Age Prediction Using Xception Model, *Visit GitHub Repo*

- Predicted pediatric bone age using hand X-ray images with an Xception model.
- Applied data augmentation and tracked model performance via Wandb, achieved a training error of 4.9 months and validation error of 9.1 months.

Exploration of Recurrent Networks: RNNs and LSTMs, *Visit GitHub Repo*

- Explored RNNs for time series prediction on weather data, and LSTMs for S&P 500 stock market trend forecasting.

Mechanical Component Classification with ResNet-50

- Utilized the ResNet-50 algorithm to classify four distinct mechanical components, demonstrating proficiency in machine learning and component recognition.

Skills

Programming	Python, C++, Matlab, HTML, CSS, JavaScript
Frameworks	Scikit-learn, OpenCV, TensorFlow, Keras, PyTorch, React
CAD/CAE	Solidworks, Siemens NX, 3D print software, Comsol
Platforms	NodeMCU, Arduino, Git, Linux
Soft Skills	Critical thinking, R&D, teamwork, Problem solving
Languages	English (Proficient, IELTS: 7), Farsi (Native), German (A1)

Certificate

- May 2023 **Machine learning Specialization, *link***
Institute: DeepLearning.AI
- Supervised Machine Learning: Regression and Classification
 - Advanced Learning Algorithms
 - Unsupervised Learning, Recommenders, Reinforcement Learning

Selected Courses

- Artificial Intelligence: 19.5/20
- Mechatronics: 16.75/20
- Dynamics: 19/20
- Fundamental of Electronics: 20/20
- Control: 16.3/20

References

Dr. Manouchehr Moradisabzevar	moradih@ut.ac.ir
Dr. Alireza Daneshmehr	daneshmehr@ut.ac.ir
Dr. Rezvan Nasiri	rezvan.nasiri@ut.ac.ir