Hamed Hamzeh

Curriculum Vitae

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Education

2019–2023 **B.Sc. in Mechanical Engineering**,
University of Tehran, Tehran, Iran, GPA: 16.13/20, last two years GPA: 3.69/4

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

- Artificial intelligence & machine learning
- Robotics
- Control and Intelligent systems
- Computer vision
- Design and manufacturing
- Reinforcement learning

Experience

Apr 2024 -present **AI Specialist Intern**
Bina Experts, a company in the field of computer vision
- Design and implement machine learning models, particularly convolutional neural networks (CNNs), for tasks such as object detection, image segmentation, and image classification.
- Collect, clean, and annotate large datasets to train and validate machine vision models, ensuring high-quality and robust data pipelines.
- Work closely with cross-functional teams, including data scientists, software engineers, and product managers, to deliver comprehensive AI solutions.
- Document processes, models, and findings, and present results to stakeholders in a clear and concise manner.

Jul 2023 -present **Research assistant**, *Advanced Robotics and Intelligent Systems Lab*, School of Electrical and Computer Engineering, University of Tehran
Supervisor: Prof. Manouchehr Moradisabzevar
- Currently working on the development of a semi-soft robotic system, with plans to detail our findings in a forthcoming research paper.
- Developed and implemented software for a gyroscopic sensor to capture real-time data and Utilized the processed data to direct the movements of a robotic system.
- Designed and fabricated 3D-printed components, and integrated servo motors into a robotic hand that is going to be manipulated using a smart glove.
- Investigated the coding process and implemented programs utilizing NodeMCU and Arduino.

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 **Product Design and Manufacture**
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 1% students amongst more than 160000 participants in Iranian University Entrance Exam (Konkur)

Selected Projects

Feb 2024 **Predicting Hydrogen Storage in MOFs**
- Data preprocessing: Cleaned and transformed the raw data to improve model robustness.
- Employed tree-based models (e.g., Random Forest, Gradient Boosting) to capture complex relationships between MOF properties and hydrogen storage.

Oct 2023 **Puppeteer Robot Hand**
- programmed and built a robotic hand that can manipulate a puppet using servo motors, DC motors, 3D-printed parts, Node Mcu and MPU6050 sensor. The Robot's arms can be controlled by a smart glove and also direct the movements of the robot via MPU6050.

Mar 2023 **Mechanical Component Classification with ResNet-50 (university project)**
- Utilized the ResNet-50 algorithm to classify four distinct mechanical components, demonstrating proficiency in machine learning and component recognition.

Certificate

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

Skills

Languages

Fluent English: IELTS: 7/9 R:7.5, L:8, S:7, W:6

Native Farsi

Software skills

Professional Python (Deep learning, Machine learning, TensorFlow, PyCharm, Keras), Solid works, Onshape, Matlab, Arduino, Microsoft Office

familiar Ansys Fluent, Comsol, Front-End developing (JavaScript, ReactJS, Github)

Selected Courses

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

Volunteering

2020 **Hayka**
- Research and content production in the field of psychology and child upbringing.

References

Dr. Manouchehr Moradisabzevar moradih@ut.ac.ir
Dr. Alireza Daneshmehr daneshmehr@ut.ac.ir
Dr. Mohammad Khoshnevisan m.khoshnevisan@northeastern.edu