

ARASH ABBASI LARKI

☎ +98 901 408 0073 ✉ arash.abbasi20@gmail.com 🔗 [linkedin.com/in/arashabbasilarki](https://www.linkedin.com/in/arashabbasilarki) 🐙 github.com/abbrash

Education

K. N. Toosi University of Technology

September 2020 – February 2024

M.Sc. in Mechatronics Engineering

Tehran, Iran

CGPA: 3.7/4.0

Thesis Title: Cognitive Load Classification Based on Electrooculography (EOG) and using Machine Learning

Supervisor: Dr. Mehdi Delrobaei

Shahid Chamran University of Ahvaz

September 2014 – February 2020

B.Sc. in Mechanical Engineering

Ahvaz, Iran

Thesis Title: Development and Implementation of a Fuzzy Logic Controller for the Navigation of an

Obstacle-avoiding Mobile Robot

Supervisor: Dr. Afshin Ghanbarzadeh

Research Interest

- Cognitive Assessment
- Human-Computer Interaction
- Data Science
- Machine Learning
- Brain-Machine Interface
- Deep Learning
- Computer Vision
- Wearable Devices
- Statistical Analysis

Relevant Coursework

- Mechatronics (4/4)
- Biomechatronic Systems (4/4)
- Neuromuscular Control Systems (4/4)
- Artificial Intelligence and Expert Systems (4/4)
- Principles and Applications of Internet of Things (4/4)
- Seminar (4/4)

Technical Skills

Programming and Scientific Computing: Python, C/C++, HTML, MATLAB & Simulink

Hardware: Arduino, Raspberry

Statistical Software: SPSS Statistics

Graphic Design Software: Adobe Illustrator

Software Tools: Git, Github, Jupyter Notebooks, VS Code

Computer-aided Design (CAD): CATIA, SolidWorks, Siemens NX

Simulation/Analysis Software: COMSOL, MSC Adams, ANSYS

Soft Skills: Communication, Organization, Leadership, Management

Research Skills: Data Collection, User interviews, Human-Computer Interaction, Data analysis, Experiment Design, Machine Learning, Deep Learning, Large Language Models.

Experience

K. N. Toosi University of Technology

September 2020 – Present

Graduate Research Assistant

Tehran, Iran

- Conducted Research, analyzed and interpreted the results
- Assisted in the supervision of undergraduate students

K. N. Toosi University of Technology

September 2023 – January 2024

Graduate Teaching Assistant

Tehran, Iran

Neuromuscular Control Systems a graduate course taught by Dr. Mehdi Delrobaei

- Facilitating hands-on learning through motion capture data collection
- Organized lecture notes, grading assignments, and conducting meetings with students

K. N. Toosi University of Technology

February 2023 – July 2023

Graduate Teaching Assistant

Tehran, Iran

Biomechtronic systems a graduate course taught by Dr. Mehdi Delrobaei

- Helped students with course projects to use COMSOL to simulate the Electrical brain stimulation
- Organized lecture notes, grading assignments, and conducting meetings with students

Selected Projects

Breast Cancer Detection

Artificial Intelligence Course @ KNTU, 2023

- Performed EDA on RSNA Mammography Dataset to improve model development
- Implemented and compared various CNN architectures (custom, VGG16, ResNet50)

Object Detection Network Training on GWHD Dataset for Wheat Head Localization

Artificial Intelligence Course @ KNTU, 2023

- Trained an object detection network using the Global Wheat Head Detection (GWHD) dataset
- Implemented and fine-tuned state-of-the-art object detection algorithms for accurate wheat head localization

Estimating Inverse Kinematics for a Panda UR5 Franka Manipulator Using Neural Networks

Artificial Intelligence Course @ KNTU, 2023

- Developed a neural network-based solution for inverse kinematics of a Panda UR5 Franka robotic manipulator
- Implemented and compared various neural network architectures for accurate joint angle prediction

Develop an Anomaly Detection Algorithm for Gear Vibration Monitoring

Principals and Applications of Internet of Things (IoT) Course @ KNTU, 2021

- Designed and implemented an IoT-based system for real-time gear vibration monitoring
- Developed an anomaly detection algorithm to identify potential gear failures based on vibration patterns

Develop a University Attendance System using Federated Face Recognition

Principals and Applications of Internet of Things (IoT) Course @ KNTU, 2021

- Created a privacy-preserving attendance system using federated learning and face recognition technologies
- Implemented a distributed system architecture to ensure data privacy and efficient processing

Farm Bot Simulation using Simscape in Simulink

Mechatronics Course @ KNTU, 2021

- Developed a comprehensive simulation of a Farm Bot using Simscape in MATLAB Simulink
- Modeled and analyzed the mechanical, electrical, and control systems of the agricultural robot

Designing and Deploying a DC Motor PID Controller using Simulink and Arduino

Industrial Control Course @ KNTU, 2020

- Designed and implemented a PID controller for a DC motor using MATLAB Simulink
- Deployed the controller on an Arduino platform for real-time motor speed control and performance evaluation

Horse Head Pump Simulation & Analysis using MATLAB & Siemens NX

Dynamics of Machinery Course @ SCU, 2017

- Conducted simulation and analysis of a horse head pump mechanism using MATLAB and Siemens NX
- Performed kinematic and dynamic analysis to optimize the pump's performance and efficiency

Publications

- Akram Shojaei, **Arash Abbasi Larki**, Mehdi Delrobaei, Hanieh Moradi, and Yas Vaseghi. "IMU-Based Motion Capture Data for Various Walking Tasks." figshare, 24-Jun-2024.
- Mobina Zibandepour, Akram Shojaei, **Arash Abbasi Larki**, and Mehdi Delrobaei. "Preliminary Guidelines for Electrode Positioning in Noninvasive Deep Brain Stimulation via Temporally Interfering Electric Fields" 2023 11th RSI International Conference on Robotics and Mechatronics (ICRoM), Tehran, Iran, Islamic Republic of, 2023, pp. 739-744.
- **Arash Abbasi Larki**, Akram Shojaei, and Mehdi Delrobaei. "Towards Cognitive Load Assessment Using Electrooculography Measures", (2023). arXiv preprint arXiv:2312.11418.

- Hanieh Moradi, Yas Vaseghi, **Arash Abbasi Larki**, Akram Shojaei, and Mehdi Delrobaei. "Gait kinematics in healthy participants: a motion capture dataset under weight load and knee brace conditions", Computers in Biology and Medicine - (Under review)
- Sobhan Teymouri, **Arash Abbasi Larki**, Melika Mohammadi, and Sajad Haghazad Klidbary. "Hybrid Vision Transformer-Boosting Model for Skin Lesion Classification on SLICE-3D", RSI International Conference on Robotics and Mechatronics (ICRoM) - (Submitted).
- Mobina Zibandehpoor, Fatemeh Alizadehziri, **Arash Abbasi Larki**, Sobhan Teymouri, and Mehdi Delrobaei. "Electrooculography Dataset for Objective Spatial Navigation Assessment in Healthy Participants", Scientific Data - (Submitted)

Awards & Honors

- Ranked within the top **2%** among more than **220,000** participants in the Iranian University Entrance Exam for a B.Sc. degree.
- Received **full Scholarship** from Shahid Chamran University of Ahvaz for a B.Sc. degree in Mechanical Engineering

Languages

- **English:** IELTS (Academic): 7.0 (Listening 8.0, Speaking 7.0, Writing 6.5, Reading 6.0)
- **Persian:** Native

Hobbies & Interests

Playing Video Games, Fitness, Gardening, Cooking

Community Involvement

Animal Welfare, Tutoring for Disadvantaged Youth

References

Dr. Mehdi Delrobaei

Mechatronics Engineering Department, K. N. Toosi University of Technology

Email: delrobaei@kntu.ac.ir

Phone: +98 (21) 840-62 Ext. 304

Assistant Professor

Tehran, Iran

Dr. Esmaeil Najafi

Cognition & AI, Saxion University of Applied Sciences

Email: e.najafi@saxion.nl

Phone: +316 3981 3630

Associate Professor

Enschede, Netherlands

Dr. Afshin Ghanbarzadeh

Mechanical Engineering Department, Shahid Chamran University of Ahvaz

Email: Ghanbarzadeh.A@scu.ac.ir

Phone: +98 (61) 3322 Ext. 5675

Assistant Professor

Ahvaz, Iran