HOSSEIN MEHNATKESH

Control Engineer

Summary.

He is a detail-oriented control engineer with more than two years of experience managing control, automotive, and diagnosis industry projects to meet specifications and move initiatives forward. He has strong analytical skills and a deep interdisciplinary understanding of mechanical and electrical systems enabling problem-solving for unique and complex challenges in design and implementation. His research interests are control theories, artificial intelligence, and applied machine learning.

Languages.

Persian | Native

English | overall: **6.5** Aug 2022

- Listening: 7.0
- Reading: 6.5
- Speaking: 6.5
- Writing: 6.0

Personal Data.

- **Date of Birth:** 08 July 1996
- +98 (937) 759-5784
- Azadi Ave,Tehran, Iran
- h.mehnatkesh@gmail.com
- linkedin.com/in/h-mehnatkesh

Education.

Sharif University of Technology Sep. 2018 – Dec. 2020

Master of Science: Control Theory and Deep Learning

Overall GPA: 18.54 / 20

Advisors: *Aria Alasty, Mohammad Jafar Kermani*

Thesis: Experimental Modeling of a Transparent Fuel Cell with Aid of Deep Neural Network to Measure Water Coverage Ratio and Fuzzy Control

K. N. Toosi University of Technology Sep. 2014 – Sep. 2018

Bachelor of Science

Overall GPA: 17.63 / 20

Advisor: *Ali Nahvi*

Thesis: Vehicle Parallel Park Training Using a Haptic Assistance Torque in a Driving Simulation

Publications.

Expert Systems with Applications Journal Oct. 2022

Mehnatkesh, H., Jalali, S.M.J., Khosravi, A., Nahavandi, S.

An Intelligent Driven Deep Residual Learning Framework for Brain Tumor Classification using MRI Images

IEEE Sensors Journal Apr. 2020

Mehnatkesh , H., Alasty , A., Boroushaki , M., Khodsiani , M.H.,Hasheminasab , M.R., Kermani, M.J.

Estimation of Water Coverage Ratio in Low-Temperature PEM-Fuel Cell Using Deep Neural Network

Conference ISME27 Apr. 2019

Mehnatkesh , H., Nahvi , A.

Parallel Park Training Using Haptic Assist Torque in Driving Simulator (In Persian)

Research Experience.

Fault diagnosis of internal combustion engines

Functionally studying the behavior of the engine and its faults during the hot test are our aim. Some of the faults are related to the internal section of the engine, such as the spark plug gap, which is not visible from the outside, and the other section is the external behavior of the system, such as balanced power and sufficient comparison in each cylinder.

Detection of water in a transparent fuel cell use of a deep neural network

There is no tool to make measure water in a fuel cell and its magnitude does not exist in a system of equations to determine the amount of water available to increase efficiency and service life.

Parallel park training use of haptic torque in the driving simulator

A haptic assist torque is applied to a steering wheel for aiding driving trainees during parallel parking. The share of haptic assist torque is gradually reduced and the trainee's involvement increases.

Designing, building, controlling, and analyzing an inverted pendulum

Control of one degree of freedom reverse pendulum with the PID controller (Use of the IMU sensor), emotional control.

Modeling, controlling, and analyzing a quadcopter with MATLAB

Model-based control design with the aid of MATLAB and Arduino for a quadcopter.

Simulation and modeling nonlinear dynamic systems

Simulation and modeling of nonlinear systems with the aid of analytical dynamics methods such as Lagrange, Modified Lagrange, Augmented, Elimination, Embedding, and Greenwood methods in the Analytical Dynamics course.

Control of PEM fuel cell with the aid of a nonlinear and fuzzy controller

Sliding mode, feedback linearization, gain scheduling and PID controller have been developed for this system to increase the service life. Furthermore, supervisor fuzzy-PID, fuzzy sliding mode, and trial and error fuzzy-controller have been developed too. Finally, we combined metaheuristic and heuristic optimization with traditional methods.

Programing.

- **MATLAB** | Advanced
- **Python** | Advanced
- **LabVIEW** | Intermediate
- **Java** | Intermediate
- **C++ & C#** | Familiar
- **Git** | Familiar

Skills.

- **SOLIDWORKS** | Advanced
- **Arduino** | Advanced
- **PLC Delta Series** | Intermediate
- **ARM (STM32)** | Intermediate
- **Raspberry Pi** | Familiar

Academic Experiences.

Intelligent Systems and Control Feb. 2020 – Jun. 2020

Python instructor and teaching assistant in "Intelligent Systems and Control" course presented by Dr. Mehrdad Boroushaki at *Sharif University of Technology*.

Instrumentation Sep. 2019 – Dec. 2018

Teaching assistant and Arduino instructor for measurement and control in the "Instrumentation" course presented by Dr. Ali Nahvi at *K. N. Toosi University of Technology*.

Professional Experiences.

JETCO Company Jun 2021 - Present

Senior Control Engineer

- As the head of the control group, he has been involved in the control and fault detection of a four-stroke engine.
- They are working with various sensors connected to the engine including oxygen, pressure, temperature, camshaft position, and engine speed sensor and their faults.
- They are controlling various actuators connected to the engine, including the throttle, coil, injector, and CVVT and their faults.
- Designing a controller for engine speed in 50 RPM error bound.
- Calibration of the control logic to turn on all engine variants available in IKCO.

Black Gold Innovation Company July 2020 – May 2021

Junior Research and Development Engineer

- Conceptual design of fully mechanical mechanisms to operate in tough situations.

Rahnema Collage May 2021 – Jun 2021

Data Science Internship

- Anomaly detection
- Use of unsupervised learning for cybersecurity analysts with the aid of HTTP log files.

Virtual Reality Laboratory May 2021 – Jun 2021

Research Assistant

- Research assistant in a section of car simulation.

Honors.

- One of the top 10 percent of K. N. Toosi University of Technology
- Patent with claim number of 139750140003004744 in Iran *(under submission)*
- Selected paper of the 27th Mechanical Engineering Conference
- Ranked in top 1 percent, B.Sc. nationwide entrance exam of Iranian Universities with nearly 222507 participants

References.

Prof. Aria Alasty *Professor at Sharif University of Technology*
Email: aalasti@sharif.edu Homepage: http://sharif.ir/~aalasti

Prof. Mehrdad Boroushaki *Associate Professor at Sharif University of Technology*
Email: boroushaki@sharif.edu Homepage: http://sharif.edu/~boroushaki

Prof. Ali Nahvi *Assistant Professor at K. N. Toosi University of Technology*
Email: nahvi@kntu.ac.ir Homepage: http://wp.kntu.ac.ir/nahvi

Hossein Mehnatkesh

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