Ali Karami

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Gmail Website linkedin github

Education

University of Tehran **Sep. 2017 – Sep. 2021**

Bachelor of Science in Electrical Engineering (Control Systems) *Tehran, Iran*

- Control Systems Focus GPA (last three semesters): 19.23/20 (4/4)
- Overall GPA: 17.76/20 (3.81/4)

Nokhbeghan High School **Sep. 2013 – Aug. 2017**

Diploma in Mathematics and Physics *Tehran, Iran*

- GPA: 19.16/20 (4/4)

Areas of Interest

- Artificial Intelligence and Machine Learning
- Optimization and Optimal Control
- Computer Vision and Pattern Recognition
- Federated Learning
- Deep Learning
- Reinforcement Learning
- Biomedical Signal Processing

Honors and Awards

- Ranked 1^{st} among Electrical Engineering B.Sc. students in the seventh and eighth semesters, University of Tehran.
- Eligible for Exemption from M.Sc Entrance Exam in the University of Tehran as **an exceptionally talented** student.
- Ranked among top 10% out of 125 undergraduate students, School of Electrical and Computer Engineering, University of Tehran.
- Ranked 346^{st} among more than 150,000 attendees of Iran universities' entrance exam, "Konkur". (Ranked among the first 0.3% of attendees)

Publications (Details)

Journal Paper **Sep. 2021**

- **A. Karami**, M. Montazeri, H. Kebriaei, "Traffic Light Management System by Federated Deep Reinforcement Learning," IEEE/CAA Journal of Automatica Sinica. (*Submitted*)
- Federated Learning • Deep Learning • Reinforcement Learning • Traffic Management

Journal Paper **June. 2021**

- Akhavan, S., Baghestani, F., Kazemi, P., **Karami, A.**, Soltanian-zadeh, H. 2021, "Dictionary Learning for Sparse Representation of Signals With Hidden Markov Model Dependency," Digital Signal Processing Elsevier Journal. (*Submitted after Revision*)
- Sparse Signal Processing • Dictionary Learning • Machine Learning

Research Experiences and Internships

Intelligent System Lab, University of Tehran **Summer 2021 – Present**

- FedVision – Currently working with Dr. Hamed Kebriaei on an Online Visual Object Detection Project powered by Federated Learning.

Qeshm Voltage - Siemens dealership in Iran **Summer 2020**

- Building IOT products using Arduino/ARM/AVR microcontrollers, sensors, displays, keypads, relays, PCBs, etc.

The Course Management System | *University of Tehran IEEE Student Branch* **Summer 2019**

- Designing The Course Management System for the IEEE student branch of the University of Tehran by PHP, JavaScript/AJAX, and HTML/CSS.

Relevant Courses (Graduate courses are indicated by †)

- Machine Learning† (20/20)
- Blind Source Separation† (18.5/20)
- Modern Control Systems (20/20)
- Discrete-Time Signal Processing (19.25/20)
- Operational Research (20/20)
- Linear Algebra (18.4/20)
- Digital Control Systems (19.7/20)

Technical Skills

Languages: Python, Matlab/Simulink, C/C++, HTML/CSS, JavaScript, SQL, PHP.

Python Notable AI Packages: Tensorflow, Keras, Sklearn.

Hardware/System Design: VS Code, Simulink, Microcontrollers (AVR/ARM/Arduino), Altuim Designer.

Technologies/Frameworks: Linux, GitHub, WordPress, LaTeX.

Notable Academic Projects

Blind Source Separation **Spring 2021**

- Implementing different ICA algorithms (such as FastICA).
- Implementing single/multi-channel blind source deconvolution.
- Implementing dictionary learning algorithms (MOD and K-SVD) for sparse representation of signals.
- Implementing an LDA classifier for an EEG dataset based on the CSP approach.
- Implementing the CCA approach in the detection of the Stimulation frequency of SSVEP datas.

Feature Conditioning Methods and Generative/Discriminative Classifiers | *Machine Learning* **Fall 2020**

- Implementing feature conditioning methods to reduce feature dimensions and selecting the best Classifier based on different criteria such as accuracy, precision, recall, etc.

Data Tidying | *Machine Learning* **Fall 2020**

- Web scraping with python and extracting data from Html web pages Varzesh3 using BeautifulSoup.

Electric Power Dispatching | *Operational Research* **Fall 2020**

- Deciding the effective and healthy operation of the whole power grid by electric power dispatching system.

Inverted Pendulum | *Modern Control Systems* **Fall 2020**

- First, I modeled the inverted pendulum system and linearized it around its equilibrium point. Then I controlled the system in position and angle by PID/pole-placement controllers in Matlab and Simulink.

My Shazam - Music Search Engine | *Signals and Systems* **Spring 2019**

- Developing a Music Search Engine in Matlab using Signal Processing Algorithms, Fourier Transform, Signal Spectrum, Digital Filters, etc.

4-DOF Delta Parallel Robot | *Fundamentals of Mechatronic Engineering* **Spring 2020**

- Carry out the design, kinematic problem, and control of a 4-DOF Delta parallel manipulator.

Obstacle Avoidance for Redundant Manipulator | *Linear Algebra* **Spring 2020**

- Using redundant robots instead of robots with full rank configuration space in the workspace with obstacles and solving inverse kinematic equations of the redundant robots.

Object Tracker and Facial Components Identifier | *Fundamentals of Mechatronic Engineering* **Spring 2020**

Language

- TOEFL iBT: 98/120 (Reading: 24, Listening: 28, Speaking: 23, Writing: 23)
- Farsi: Native

Teaching Assistantship

Modern Control Systems | *Chief TA* **Fall 2021**
- Instructor: Dr. Hamed Kebriaei

Linear Control Systems | *Project Designer* **Fall 2020**
- Instructor: Dr. Fariba Bahrami BoodeLalou

Linear Control Systems Lab | *Grader* **Spring 2020**
- Instructor: Dr. Fariba Bahrami BoodeLalou

Signals and Systems | *Project Designer* **Spring 2021**
- Instructor: Dr. Saeed Akhavan Behabadi

Fundamentals of Mechatronic Engineering | *Project Designer* **Spring 2021**
- Instructor: Dr. Mehdi Tale Masouleh

Computer Architecture | *Grader* **Spring 2021, Fall 2021**
- Instructor: Dr. Saeed Safari

Electronics 2 | *Grader* **Fall 2020, Spring 2021**
- Instructor: Dr. Ali Afzali Kousha

Electrical Machines 1 | *Grader* **Spring 2021, Fall 2021**
- Instructor: Dr. Moein Abedini