

AMIRHOSSEIN DABIRI AGHDAM

Department of Electrical and Computer Engineering, Faculty of Engineering, University of Tehran, Iran

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EDUCATION

University Of Tehran

Sep. 2018 - Present

- B.Sc. in Electrical Engineering (Control Engineering specialization)

Cumulative GPA: **19.24/20**

Thesis: "An Analysis of Forgettable Examples Extracted During Multilingual Models Training"

Last Two Years GPA: **19.48/20**

- Minor in Computer Engineering

Cumulative GPA: 18.75/20

Allameh Helli Tehran High School

Sep. 2014 - Jun. 2018

- Diploma in Mathematics and Physics' Discipline

Cumulative GPA: 19.95/20

Affiliated with the National Organization for the Development of Exceptional Talents (NODET)

RESEARCH INTERESTS

- Machine Learning & Deep Learning
- Natural Language Processing
- Reinforcement Learning
- Computer Vision

HONORS & AWARDS

- Ranked 2nd among 120 B.Sc. students in Electrical Engineering, University of Tehran. 2022
- Ranked 1st among Control Engineering B.Sc. Students, University of Tehran. 2022
- Ranked 537th among about 150,000 participants in Nationwide University Entrance Exam. 2018
- Winner of FOE Award (Faculty of Engineering Award for top students). 2019
- Recognized as a talented student in the entrance exam of NODET for high school. 2014 - 2018
- Kyokushin Karate Black Belt holder and member of IKO Kyokushinkaikan. 2008 - Present

PUBLICATION

- TARGETED ADVERSARIAL ATTACKS AGAINST NEURAL MACHINE TRANSLATION
Sahar Sadrizadeh, AmirHossein Dabiri Aghdam, Ljiljana Dolamic, Pascal Frossard
Submitted to ICASSP 2023.

RESEARCH EXPERIENCE

Research Internship - EPFL Excellence in Engineering (E3)

Jul. 2022 - Sep. 2022

Signal Processing Laboratory (LTS4), EPFL

Lausanne, Switzerland

- Worked on the targeted adversarial attacks against transformer-based neural machine translation models.
- Under the supervision of Prof. Pascal Frossard and Dr. Sahar Sadrizadeh

Research Assistantship

Sep. 2022 - Present

NLP Lab, ECE department, University of Tehran

Tehran, Iran

- Working on analyzing the effect of forgettable examples training on the out-of-distribution generalization of multilingual models in single- and multi-source training. (bachelor's thesis)
- Under the supervision of Dr. Yadollah Yaghoobzadeh

Summer Internship

Jul. 2021 - Sep. 2021

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Tehran, Iran

- Worked on developing Chatbot NLU, for which I trained two of the state-of-the-art models (BERT & Bi-LSTM) implemented with PyTorch for Intent Detection & Slot Filling on the ATIS dataset after applying various data augmentation and balancing methods. (GitHub)
- Under the supervision of Dr. Reshad Hosseini

TEACHING EXPERIENCE

Teaching assistant, University of Tehran, ECE department

- Engineering Probability & Statistics

Instructor: Dr. B. Bahrak

Fall 2022

- Modern Control Systems

Instructor: Dr. H. Kebriaei

Fall 2022

- Introduction to Computing Systems & Programming

Instructor: Dr. M. R. Hashemi

Spring 2020

- Signals and Systems

Instructor: Dr. S. Akhavan Behabadi

Spring 2022

- **Introduction to Computing Systems & Programming**

Instructor: Dr. M. Moradisabzevar Fall 2019

- **Linear Control Systems**

Instructor: Dr. A. Adhami-Mirhosseini Fall 2021

- **Electronics I**

Instructor: Dr. Z. Sanaee Spring 2021

- **Engineering Mathematics**

Instructor: Dr. M. Mohammad Taheri Fall 2020

RELEVANT COURSES (Graduate courses are indicated by †)

- **Natural Language Processing[†] (20/20)**

Instructors: Dr. Y. Yaghoobzadeh & Dr. H. Faili

- **Interactive Learning[†] (current semester)**

Instructor: Dr. M. Nili Ahmad Abadi

- **Linear Algebra (20/20)**

Instructor: Dr. M. J. Yazdanpanah

- **Digital Control Systems (20/20)**

Instructor: Dr. A. Yaghmaei

- **Operational Research (19.3/20)**

Instructors: Dr. A. Ramezani & Dr. M. Shokri

- **Data Structures (19.69/20)**

Instructor: Dr. R. Shojaei

- **Advanced Programming (20/20)**

Instructor: Dr. R. Khosravi

- **Machine Learning[†] (18.9/20)**

Instructors: Dr. B. N. Araabi & Dr. M. A. Dehaqani

- **Artificial Intelligence (20/20)**

Instructors: Dr. H. Fadaei & Dr. M. Moradi

- **Engineering Probability & Statistics (19.5/20)**

Instructor: Dr. A. M. Rabiei

- **Modern Control Systems (19.1/20)**

Instructor: Dr. H. Kebriaei

- **Mechatronics Engineering (20/20)**

Instructor: Dr. M. Tale Masouleh

- **Algorithm Design (current semester)**

Instructor: Dr. M. J. Dousti

- **Computer Networks (20/20)**

Instructor: Dr. V. Shah-Mansouri

SELECTED COURSE PROJECTS

Natural Language Processing [Grad. course]

- Implementing renowned text Tokenizers such as BPE from scratch.
- Spam detection by implementing Naive Bayes from scratch.
- Part-of-Speech tagging and Name Entity Recognition using LSTM/GRU and Viterbi Algorithm.
- Textual Entailment task using Mono/Multi-Lingual Transformers such as XLM-RoBERTa.
- Deploying a Neural Machine Translation System using tools such as OpenNMT and FairSeq.
- Question Answering task using Transformers such as PersianBERT on three Persian datasets.

Machine Learning [Grad. course]

- Classification & Clustering of five different categories of Iranian local folklore music, which involved data gathering, data cleaning, pre-processing, and classification/clustering.
- Implementing the Expectation-Maximization Algorithm for Gaussian Mixture Density Model.
- Implementing LDA and feature selection (forward & backward selection) algorithms.

Artificial Intelligence

- Detecting COVID-19 & PNEUMONIA in X-ray scans by training a Feed Forward Neural Network implemented using Keras.
- Implementing a Feed Forward Neural Network from scratch and training it on Fashion MNIST Dataset.
- Sentiment Analysis of Digikala Comments Dataset using Naïve Bayes Classifier implemented from scratch.
- Exploratory dataset analysis and implementation of some ML algorithms for Kaggle “House Prices - Advanced Regression Techniques” Competition.
- Finding combinations of gates (AND/OR/XOR) to satisfy the truth table using genetic algorithm.
- Implementing the snake game using informed (A*) and uninformed (BFS, IDS) search algorithms.

Mechatronics Engineering

- Arranging colored blocks in the production line based on machine vision (OpenCV) using UR10 pick & place robot; simulated in CoppeliaSim and controlled by MATLAB robotics toolbox.
- A two-link robotic arm control via PID by calculating inverse kinematics (simulated in MATLAB Simulink).
- Face, eyes & mouth recognition with cascade classifier using OpenCV.

Modern Control Systems

- Stabilizing an inverted pendulum on a cart via PID and state feedback controllers (simulated in MATLAB Simulink).

Digital Control Systems

- Controlling the blood sugar level using digital controllers (digitalized PID, Dead-beat).

Operational Research

- Optimal Vehicle Routing (finding the best route with the min cost in terms of distance, etc.)

Computer Networks

- Implementing a chat room using C++ and socket programming.

Advanced Programming

- Implemented the Super Mario game with C++ (in object-oriented programming style).

SKILLS

Programming	Python, C/C++, MATLAB, Verilog, Visual Basic ML/AI libraries: Huggingface Transformers, PyTorch, Tensorflow, Keras, NumPy, Pandas, scikit-learn, OpenCV Familiar with L ^A T _E X, C#, JAVA, PHP, SQL, JS, Assembly
Engineering & Simulation Software	MATLAB Simulink®, ModelSim, Quartus, Proteus, Multisim, PSpice, CoppeliaSim, ROS, Gazebo, SolidWorks, AutoCAD
Technology	Git, Google Colab, Jupyter Notebook, MakeFile Familiar with ARM(STM32), AVR, Arduino
Operating Systems	Microsoft Windows, Linux(Ubuntu)

LANGUAGES

Persian	Native (Bilingual Proficiency)
Turkish (Azari)	Native (Bilingual Proficiency)
English	Proficient - IELTS (10 Nov. 2022): Overall 8 (R:9, L:9, S:7, W:7)

REFERENCES

Available upon request.