

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.)

Instrumentation

- A weather station based on ESP32 microcontroller and MQTT protocol with Android/Windows/Web client applications.

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^AT_EX, 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, MQTT
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.