Mostafa **Kermani Nia**

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Education

School of Electrical and Computer Engineering, University of Tehran *Tehran, Iran*

B.Sc. in Computer Engineering *Sept 2022 – Present*

- GPA: 19.71/20

National Organization for Development of Exceptional Talents (NODET) *Karaj, Iran*

Diploma in Mathematics and Physics *Sept 2018 – May 2022*

- GPA: 19.90/20

Experience

Machine Learning *University of Tehran*

Teaching Assistant *Sept 2024 – Present*

- Under supervision of Prof. Mostafa Tavassolipour and Prof. Mohammadreza Abolghasemi Dehaqani

Machines and Language Theory *University of Tehran*

Teaching Assistant *Sept 2024 – Present*

- Under supervision of Prof. Hassan Mousavi

ACM student chapter *University of Tehran*

Core Member *July 2024 – Present*

- Manage collaborative projects and programming competitions such as ICPC, enhancing teamwork.

Probability and Statistics *University of Tehran*

Teaching Assistant *July 2024 – Feb 2025*

- Under supervision of Prof. Abdol-Hossein Vahabie and Prof. Mostafa Tavassolipour

Introduction to Computing Systems and Programming *University of Tehran*

Teaching Laboratory Assistant *Sept 2023 – Feb 2025*

- Under supervision of Prof. hadi moradi and Prof. Mahmoud Reza Hashemi

Fundamentals of programming *University of Tehran*

Teaching Assistant *Jan 2024 – July 2024*

- Under supervision of Prof. Mohammad Javad Dousti

Discrete Mathematics *University of Tehran*

Teaching Assistant *Jan 2024 – July 2024*

- Under supervision of Prof. Siamak Mohammadi

Honors

- **Top Student:** Ranked 1st among all Computer Engineering B.Sc students in the University of Tehran who entered in 2022.
- **National University Entrance Exam:** Being in (Top 0.6%) in Nation-wide Iranian University Entrance Exam in Mathematics and Physics (Summer 2022).
- **Physics Olympiad:** Silver medal at Iranian National Olympiad in Physics (Summer 2021).

Research Interests

Artificial Intelligence

- DL, RL, ML; with special interests in Quantum ML and Neuro AI

Computer Vision

- Object Detection, Image Classification, Feature Extraction

Formal Methods and Verification

- Mathematical Logic

- Data Processing, Statistical Analysis, Data Visualization

Related Courses

University of Tehran

- MACHINES AND LANGUAGE THEORY, GRADE: 20/20
- STATISTICS AND PROBABILITIES (PYTHON) , GRADE: 20/20
- ARTIFICIAL INTELLIGENCE (PYTHON), GRADE: 18.5/20
- SIGNALS AND SYSTEMS (MATLAB) , GRADE: 20/20
- ENGINEERING MATHEMATICS (MATLAB), GRADE: 20/20
- PHYSICS 1 & PHYSICS 2 , GRADE: 20/20

- MACHINE LEARNING (PYTHON), GRADE: 20/20
- DATA STRUCTURES AND ALGORITHMS (PYTHON, CPP), GRADE: 20/20
- DISCRETE MATHEMATICS, GRADE: 20/20
- ADVANCED PROGRAMMING (C, CPP), GRADE: 20/20
- COMPUTER ARCHITECTURE (VERILOG), GRADE: 19.6/20
- ENGLISH LANGUAGE , GRADE: 20/20

Skills

Programming	**Advanced:** C/C++, Python, Matlab, Verilog
	Intermediate: LaTeX, Javascript, HTML/CSS
Libraries And Databases	SQL, MongoDB, Pandas, NumPy, scikit-learn, TensorFlow, Matplotlib
Soft Skills	Teamwork, Leadership, Teaching (Three years of teaching experience), Communication

Projects

Course Projects related to ML and Data science

Speaker ID and Gender Classification **Jupyter Notebook** (GitHub)
A machine learning project for speaker identification, gender classification, and
voice clustering using audio feature extraction, preprocessing, and models like SVM,
KNN, XGBoost, and clustering techniques.

RF learning and LSTM **Jupyter Notebook** (GitHub)
Part I- Reinforcement Learning and Deep Q Learning
Part II- Recurrent Neural Network (RNN) and Long short-term memory (LSTM)
Part III- Search Algorithms (A* search, Minimax search, DFS, BFS, UCS, Csp problem)

Quantum NNs and Unsupervised Learning **Jupyter Notebook** (GitHub)
part I- Unsupervised learning methods (K-means, Hierarchical Clustering, and DBSCAN) are used
Part II- Supervised learning methods (DT, RF with entropy and Gini impurity) are used
Part III- A Quantum NN is built and trained.

Deep learning model initialization schemes **Jupyter Notebook** (GitHub)
Xavier Glorot and Kaiming He initialization schemes are compared based on their papers

Unsupervised learning algorithms **Jupyter Notebook** (GitHub)
KNN, SVM, GBoost and XGBoost are used in this project

AI Optimizers and Imbalance dataset **Jupyter Notebook** (GitHub)
SGD+momentum, Adagrad and RMSprop optimizers are explained and some methods for work with
imbalance datasets (like SMOTE) are implemented

Natural language processing **Python** (GitHub)
Preliminary NLP methods are used in this project

Telegram channel auto admin **Python** (GitHub)
A dedicated Telegram channel was created to track dollar prices, incorporating automated updates and
historical data from verified sources with minimal management required

Web Data analyst **mongoDB, Python** (GitHub)
Connect web socket to a website, receive and analyze its data and save them in mongoDB

Course Projects related to image and signal processing

Steganography And Classification   **MATLAB** (GitHub)
1. Steganography in Images (Message Encoding and Decoding) | 2. IC Recognition in PCB Images
3. Diabetes Prediction using Machine Learning in MATLAB

License Plate Detection   **MATLAB** (GitHub)
The numbers and letters on the license plates in English and Farsi were identified from the video and then you got the average speed of the car.

Pretrained CNNs and GAN implementation   **Jupyter Notebook** (GitHub)
VGG16 and ResNet50 pre-trained CNNs are used with and without data augmentation in part one.
Then a Deep Convolutional Generative Adversarial Network (GAN) is created for the CIFAR-10 dataset.

License Plate Detection   **MATLAB** (GitHub)
The numbers and letters on the license plates in English and Farsi were identified from the video and then you got the average speed of the car.

Frequency Encoding   **MATLAB** (GitHub)
MATLAB-based Fourier analysis and frequency-domain message encoding.

Image recognition   **Jupyter Notebook** (GitHub)
Image recognition with Bayesian estimation

Projects related to software and Operating System development

XV6 System Projects   **C, assembly** (P1) (P2) (P3) (P4) (P5)
Part 1 : KernelBasics-XV6 | Part 2 : Syscall-Development-XV6 | Part 3 : Process-Scheduling-XV6
Part 4 : Threading-Mechanisms-XV6 | Part 5 : Memory-Management-XV6

Fantasy Football Game   **C++, Makefile** (GitHub)
It's a game that implemented with c++

Mini Uber   **C++, Makefile** (GitHub)
A simple simulation of Uber logic

professional telegram bot   **Python** (GitHub)
inline button, provided keyboard, forces join in channel, conversation bot and some other features are used in this project

TURTIX game   **C++, Makefile** (GitHub)
SFML library is used to build this game

Court piece game   **C** (GitHub)
A simulation of Hokm game

UT TUTY   **C** (GitHub)
A simple form of a Twitter app is built

Languages

Persian   Native
English   Upper-intermediate proficiency
Arabic   Basic