Mohammadamin Kafi

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EDUCATION

Bachelor of Science in Computer Engineering **Sep 2021 – Present**
Department of Electrical and Computer Engineering, Isfahan University of Technology, Iran
Minor: Intelligent Systems
GPA: 18.06/20 (3.6/4)

High School Diploma **Sep 2018 – Sep 2021**
Ezhei 2 High School (NODET)

WORK EXPERIENCE

Artificial Intelligence Engineer **Jan 2025 – Jun 2025**
Pishro Hooshmand Sepahan
I worked part-time at PHS Company, an industrial automation firm, as a member of the Artificial Intelligence R&D team. Contributed to the development of AI-based systems for predictive maintenance and fault diagnosis in industrial pipelines and machinery. Designed and implemented machine learning models to improve system reliability and early error detection in complex industrial environments.

Embedded Systems Engineer **May 2023 – Sep 2024**
Kian Pardaz ICT
I worked as an Embedded Systems Engineer at Kian Pardaz ICT, a company specializing in research and development of industrial products, including metal 3D printers. My role involved developing and optimizing embedded hardware and software solutions for industrial automation.

Image Processing in Robotics **Jan 2022 – Aug 2022**
Advanced Robotics and Mechatronics Laboratory, IUT
During my first year at Isfahan University of Technology (IUT), I worked in the Advanced Robotics and Mechatronics Laboratory at the Mechanical Engineering Department. My primary focus was on applying image processing techniques to robotic systems, contributing to projects that required real-time object detection and feature extraction for robotic automation.

TEACHING EXPERIENCE

Undergraduate Teaching Assistant
- Algorithm Design under the supervision of Dr. Maleki, Spring 2024
- Computer networks laboratory under the supervision of Dr. Fanian, Spring 2024 and Spring 2025
- Artificial Intelligence under the supervision of Dr. Falsafain, Fall 2024
- Computational intelligence under the supervision of Dr. Hosseini, Spring 2025
- Game Theory under the supervision of Dr. Narimani, Spring 2025

Volunteer & Workshop Instruction
- Instructor of Computer Vision during IUT's CESSA TechStack Event, 2025
- Instructor of Deep Learning during IUT's CESSA TechStack Event, 2024
- Instructor at Rasta's Summer School, 2024
- Instructor at Rasta's Summer School, 2022

NOTABLE PROJECTS

- **IP102 Pest Classification with CLIP and Qwen** **GitHub**
  Implemented zero-shot and fine-tuned pest classification using CLIP and Qwen-2.5-VL on the IP102 dataset. Developed modular training and evaluation pipelines with custom loss functions and automated reporting of classification metrics and confusion matrices.

- **Text-to-SQL Agent with Multi-Agent Planning** **GitHub**
  Built a high-performance Text2SQL agent combining RAG, ReAct-style planning, and multi-agent coordination to convert natural language into executable SQL.

- **LLM Fine-Tuning for Domain Adaptation** **GitHub**
  Implemented multiple LLM fine-tuning strategies including full fine-tuning, soft prompting, adapters, and LoRA. Evaluated each method's effectiveness on custom NLP tasks for domain-specific applications.

- **RAG Pipeline for Domain-Specific QA** **GitHub**
  Designed and deployed end-to-end RAG pipelines incorporating Named Entity Recognition (NER) and semantic search to enhance information retrieval for question-answering systems in specialized domains.

- **Web-Based Storehouse Management System for I4 Lab** **GitHub**
  Developed a full-stack web application using Django (backend) and React (frontend), with Docker-based deployment, to manage inventory and logistics for I4 Lab.

- **Real-Time Colonoscopy Image Segmentation for Edge Devices**
  Designed deep CNN models for real-time segmentation of colonoscopic images optimized to run on hardware-constrained platforms. Focused on accuracy and efficiency.

- **A New Method for Content-Aware Image Retargeting** **GitHub**
  Developed a content-aware image retargeting algorithm combining seam carving and scaling to resize images while preserving key content using an energy map.

- **Image Processing on Drones to Detect Plant Pests**
  Utilizing Python's OpenCV library, I developed a project to maneuver drones over plants in a house garden to detect pests.

- **AI Bot for Ultimate Tic-Tac-Toe game** **GitHub**
  I developed an AI bot employing the Minimax algorithm with Alpha-Beta pruning for Ultimate Tic-Tac-Toe as the final project for my Game Theory course.

TECHNICAL SKILLS

- **Programming Languages:** C, C++, C#, Rust, Python, MATLAB, Verilog
- **Frameworks and Tools:** OpenCV, NumPy, Pandas, TensorFlow, PyTorch, Django, Docker, LangChain, transformers

LANGUAGES

- **Farsi:** Mother tongue
- **English:** Full Proficiency. Achieved a TOEFL score of 103 in 2020 (obselete).