ALIREZA MOHAMMADI

Islamic Azad University, Kermanshah Branch, IRAN

E-mail ◇ LinkedIn ◇ Github ◇ Web site ◇ Google Scholar

EDUCATION

B.Sc. in Computer Engineering, Islamic Azad University 2020 - 2024
Kermanshah, Iran
CGPA: **3.5**/4

RESEARCH INTERESTS

● AI for science ● IOT ● AI ethics ● LLM ● Machine Learning ● Optimization

ACADEMIC EXPERIENCE

Research Assistant | *Islamic Azad University* | *Supervised by Dr.Parandin* 2022 - Present
● Coding and implementing an optimization formula utilizing machine learning models to enhance gate performance.
● Contributed to the development and implementation of various machine learning models, including RNN, CNN, FNN, and meta-learning frameworks, for multiple journal publications.

Teaching Assistant | *Islamic Azad University* | *Supervised by Dr. Habibi* 2023
● TA of Computational Intelligence | ● TA of Natural Language Processing

As a Teaching Assistant, I conducted teaching sessions, led class discussions, and provided support in understanding complex concepts. I also assisted students with assignments, offered feedback, and guided them through coding and problem-solving exercises.

PUBLICATIONS

ACADEMIC JOURNALS

1. F Parandin, P Karami, **A Mohamadi**. "Machine Learning-Driven Optimization of Photonic Crystal Structures for Superior Optical NOR Gate Performance" Applied Optics, 63(25), 6666-6673.[Link] [PDF] (**Q2, IF:1.7**)

2. F Parandin,**A Mohamadi**, P Karami. "Enhancing integrated optical circuits: optimizing all-optical NAND and NOR gates through deep learning and machine learning" Optical and Quantum Electronics 2024 Vol. 57 Issue 1 Pages 73 [Link] [PDF] (**Q2, IF:3.3)**)

3. **A Mohamadi**, F Parandin, P Karami. "Meta-Learning and Formula Optimization for All-Optical XOR, OR, and NOT Logic Gates: The ML-FOLD Method" (Under review in Scientific Reports) (**Q1, IF:3.8**)

4. F Parandin; **A Mohamadi**. "Designing and Optimizing a Photonic Crystal-Based All-Optical XOR Gate Using Machine Learning". Majlesi Journal of Electrical Engineering, 2023.[Link+PDF] (**Scopus indexed**)

5. **A Mohamadi**, M Habibi, F Parandin. "Integration of Clinical, Genetic, and Molecular Features in Predicting Castration Resistance Events in Prostate Cancer: A Comprehensive Machine Learning Analysis". Journal of Electrical and Computer Engineering Innovations (JECEI).[Link+PDF] (**Google Scholar indexed**)

CONFERENCE PROCEEDINGS

6. **A Mohammadi**, H Ghahramani, SA Asghari, M Aminian. "Securing Healthcare with Deep Learning: A CNN-Based Model for medical IoT Threat Detection" 19th Iranian Conference on Intelligent Systems (Accepted in ICIS 2024) [PDF] [Presentation] |Code| (**IEEE indexed**)

7. **A Mohammadi**, F Parandin, H Ghahramani. "Neural Network-Driven Optimization of Photonic Crystal-Based All-Optical NOT Gate Design" Third International Conference on Distributed Computing and High Performance Computing (DCHPC).IEEE,2024.[Link] [PDF] (**IEEE indexed**)

8. F Parandin, **A Mohammadi**. "Enhancing the Performance of Photonic Crystal AND Gates with Machine Learning Optimization" Third International Conference on Distributed Computing and High Performance Computing (DCHPC).IEEE,2024.[Link] [PDF] (***IEEE indexed***)

AWARDS & HONORS

- Conducting a workshop on 'An Introduction to Artificial Intelligence' at Islamic Azad University 2023
- Interviewed by Hamshahri newspaper and hispanTV as the Student Inventor [Link] 2016
- Ranked first in Laboratory Sciences in Kermanshah province 2016
- Selected idea for the 8th Student Festival Nanoscience and Nanotechnology [Link] 2015
- Recognized exceptional talent by National Organization for Development of Exceptional Talents 2014

SKILLS

Programming	Python
Libraries	Scikit-learn, PyTorch, Auto-sklearn, TensorFlow, Matplotlib, NumPy, Pandas
Skills	Machine Learning, Data Analysis, Research Prowess, Optimization

LICENSES & CERTIFICATIONS

- Supervised Machine Learning: Regression and Classification [Link] Coursera Stanford online
- Python for Data Science and Machine Learning Bootcamp Udemy

SELECTED COURSES

- Foundations of NLP and Speech (4/4)
- Artificial Intelligence and Expert Systems (4/4)
- Foundations of Computational Intelligence (4/4)
- Foundations of Computer Vision (4/4)

LANGUAGES

- Duolingo English Test: 110/160
- Scheduled for TOEFL – February
- Farsi: Native speaker

PROJECTS

Securing Healthcare with Deep Learning: A CNN-Based Model for Medical IoT Threat Detection
Developed and implemented a CNN-based model for detecting cyberattacks in IoMT environments. The proposed model achieved a perfect accuracy of 0.99 across binary, categorical, and multiclass classification tasks, outperforming previous state-of-the-art methods. This code was developed for a paper accepted at the 2024 IEEE Conference on Intelligent Systems (ICIS). [Github]

Optimization of All-Optical Gate Design Using Neural Networks | *supervised by Dr. Parandin*
This repository contains code and resources related to a comprehensive study on the application of neural networks to optimize design parameters for an all-optical NOT gate using photonic crystals. The research focuses on improve optical gate simulation software. |Code|

REFERENCES

1. Fariborz Parandin
   - Associate Professor (Department of Electrical Engineering, Islamic Azad University, Kermanshah)
   - Email: fa.parandin@iau.ac.ir

2. Sobhan Roshani
   - Assistant professor (Department of Electrical Engineering, Islamic Azad University, Kermanshah)
   - Email: s.roshani@aut.ac.ir