# Mehdi Karami

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## Summary


- Machine Learning Enthusiast with a solid foundation in developing AI-driven projects, gaining expertise in model training, algorithm optimization, and problem-solving through hands-on experience.
- Highly motivated Researcher with active contributions to open-source projects, demonstrating strong research capabilities, teamwork, and effective communication in academic and collaborative environments.
- Skilled Programmer proficient in multiple programming languages and technologies, with practical experience as an iOS Developer for an international company, winning a coding competition, leading workshops, and earning certifications in relevant programming courses.


## Education

**Bachelor of Computer Engineering** — Sep 2021 - Expected Jul 2025

Zand Institute of Higher Education — Shiraz, Iran

GPA: 3.50 (out of 4)

**Visiting Student** — Feb 2023 - Jul 2024

University of Science and Culture — Tehran, Iran

## Research Interests

- Machine learning
- Computational Neuroscience
- Programming Language Theory
- Bioinformatics
- Algorithm Design
- Compiler Design

## Work Experience

**iOS Developer** Jun 2023 – Jun 2024

Round Table Apps Development Office, Tehran, Iran

Contributed to the development of diverse, international-scale applications across various domains, including healthcare, finance, and post-transportation.

- **Resilience Box**
  - Healthcare app focused on mental health management, providing online learning resources, well-being videos, an in-depth podcast series, informational fact sheets, and access to counseling and coaching services.
- **Blossom – Save and Invest**
  - Savings app that helped users in Australia and New Zealand reach their financial goals faster by providing access to high-interest savings products.
- **MailPlus**
  - Post-transportation app designed for postal service drivers across Australia.

**Technical Contributions:**

- Utilized architectural and design patterns, such as Repository, VIP, MVC, and Clean Architectures, to manage project structure and layers.
- Conducting detailed research on the optimal utilization and development of augmented reality (AR) and virtual reality (VR) technologies, utilizing visionOS and other relevant technologies.
- Performed comprehensive research and analysis of data flow to ascertain the behavioral patterns of applications across various scenarios.
- Applied optimization techniques for real-time data processing.
- Implemented algorithms for financial calculations and optimizations.
- Conducted Behavior-Driven Development (BDD) to ensure robust and high-quality code.
- Created detailed documentation with Xcode DocC and Confluence.
- Collaborated with iOS and other teams including BackEnd, Test, Design, FrontEnd, and Android teams, using Scrum, Jira, and other management tools.

## Open Source Projects

- **Cyberattack Detection and Anomalous Behavior Analysis**
  - Utilizes a Recurrent Neural Network (RNN), technically Long Short-Term Memory (LSTM), to detect cyberattacks based on anomalous behavior in network traffic. The model identifies abnormal patterns associated with attacks, e.g., DDoS, port scanning, and brute-force attempts.
  - Stack: Python, Keras (TensorFlow), Scikit-learn, Principal component analysis (PCA), Receiver Operating Characteristic (ROC) Curve, …
- **Solar Power Generation Prediction**
  - Implements multiple machine learning models, i.e., Linear Regression, Decision Tree Regressor, Gradient Boosting Regressor, Random Forest Regressor, Multi-layer Perceptron (MLP) Regressor, and Deep Neural Network (DNN), to predict solar power generation. Models are evaluated using performance metrics such as Mean Absolute Error (MAE), Mean Squared Error (MSE), Coefficient of Determination ($R^2$), and Confusion Matrix to ensure accurate predictions.
  - Stack: Python, Scikit-learn, TensorFlow, Pandas, Matplotlib, NumPy, Seaborn, ...
- **AI Sight Quest**
  - Utilizes AI to extract text from images via Apple's Vision Framework and provides instant answers to document questions using the Bidirectional Encoder Representations from Transformers (BERT) language model.
  - Stack: Machine Learning, Deep Learning, Swift, SwiftUI, SwiftData, Model-view-viewmodel (MVVM), Vision Framework, Speech Framework, TipKit, …
- **Proximity Finder**
  - Efficiently detects the nearest point pair on a 2D screen with O(n log n) complexity using Divide and Conquer. Includes an interactive slider for dynamic point adjustment.
  - Stack: Swift, UIKit, Model-View-Controller (MVC), Algorithm Design, Algorithm Optimization, Core Graphics, …
- **Heart Pulse Detector - Beats Per Minute (BPM) Counter**
  - Programs a BPM calculator using an Arduino Uno to monitor heart rate and display pulse data through a real-time heart rate graph.
  - Stack: Arduino C/C++, Data Processing, Sensor Integration, Display Handling, ...
- **Command-line Game**
  - Designs and implements interactive command-line games, emphasizing scalable architecture, efficient logic processing, and a seamless user experience.
  - Stack: Swift, Protocol-Oriented Programming (POP), Clean Architecture, …

**Additional projects can be found at: GitHub account.**

## Volunteering

**Workshop on Git and GitHub** Dec 2024
Zand Institute of Higher Education Shiraz, Iran

**Workshop on Git and GitHub (Techniques for Effective Collaboration)** May 2024
Credential ID 400434784 Tehran, Iran
K. N. Toosi University of Technology

**Contributor of Swift Evolution GitHub Repository** Since Dec 2023
Participated in the proposals of the Swift Evolution repository.

## Honors & Awards

**Winning First Place in the C++ Programming Language Competition** May 2022
Hosted by Zand Institute of Higher Education Shiraz, Iran

## Certificates

**Swift for Beginners** Issued by Mind Luster
Credential ID 1688271634 Mar 2023

**Theoretical understanding of Swift 4** Issued by Sololearn
Credential ID CT-QD4IETGO Jan 2023

## Hobbies

- Playing Violin
- Traveling
- Esports Gaming (LOL)
- Swimming
- Cooking International Cuisine
- Watching Movies