Diba Rashidi

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Research Interests

Explainable AI	Trustworthy AI	Cyber-physical Systems
Applied Machine learning	Data Mining	IoT

Education

- **University of Tehran** — Tehran, Iran
  Master's degree, Information Technology - GPA: 4/4 — *Sep 2022 - now*

  Courses: Data Mining, Artificial Neural Networks, Trustworthy AI, Social Network

- **Alzahra University** — Tehran, Iran
  Bachelor of Science - Bachelor's degree, Mathematics - GPA: 3.2/4 — *Sep 2018 - Sep 2022*

Publications

- **Design and implementation of an ultralow-power ECG patch and smart cloud-based platform**

  (IEEE Transactions on Instrumentation and Measurement 2022)

- **Clinical IoT in Practice: A Novel Design and Implementation of a Multi-functional Digital Stethoscope for Remote Health Monitoring**

  (Published, 2023)

Research Experience

- **Advanced Robotics and Intelligent Systems Lab** — University of Tehran
  Research Assistant — *Sep 2022 - Present*
  - **Earthquake Early Warning**:
    - Implemented noise cancellation and earthquake detection on seismic signals using machine learning, integrating transformer models and RNNs to enhance accuracy and signal clarity.
    - Implemented STA/LTA algorithms to rapidly and accurately locate earthquake epicenters using mobile accelerometer data, enhancing the precision of seismic monitoring systems.
    - Studied various mechanisms for constructing shake tables, analyzing different design approaches and actuation systems to simulate seismic activity for structural testing and earthquake engineering research.
  - **Trustworthy AI**:
    - Examined the explainability of image classification by using saliency maps and class activation maximization methods to highlight influential image regions and clarify model decisions.
    - Worked on structured causal models and Bayesian networks to enhance the interpretability of AI systems, enabling clearer insights into the causal relationships and dependencies within the data.
    - Focused on fairness in AI decision-making, implementing fairness criteria to ensure equitable outcomes across different demographic groups and reduce bias in model predictions.
  - **Deep Learning developer**:
    - Implemented and trained a Variational Autoencoder (VAE) on the Fashion MNIST dataset for unsupervised learning and dimensionality reduction.
    - Worked on fine-tuning the BERT transformer model for Persian language data to improve natural language processing tasks.
  - **Data Mining**:
    - Worked on Data Warehousing and OLAP (Online Analytical Processing) to design and implement data storage solutions and enable complex queries and data analysis for business intelligence.
    - Applied frequent pattern mining techniques to discover recurring patterns and associations in large datasets, enhancing data-driven decision-making and insights.

- **Wearable Sensors Lab** — Sharif University
  Researcher — *Nov 2020 - Aug 2022*
  - **Smart Health Care**:
    - Developed solutions for remote healthcare, including smart holters and stethoscopes, to enable real-time health monitoring and improve patient care through advanced wearable technologies.

- Designed and implemented a cloud-based platform for remote healthcare, enabling real-time patient monitoring, data storage, and telemedicine services.
- Conducted ECG signal processing to analyze and interpret electrocardiogram data for improved diagnosis and monitoring of cardiovascular health.
- Developed AI algorithms for arrhythmia detection using ECG signals.

- **Alzahra University**
  Researche Assistant *Sep 2018 - Aug 2022*
  - **Mathematics**:
    - Implemented graph theory algorithms to analyze and solve problems related to network structures.
    - Utilized numerical methods for interpolation and extrapolation to estimate values and predict trends based on discrete data points.
    - Applied linear optimization algorithms to solve mathematical problems involving constraints and objective functions, optimizing solutions for various applications.

Teaching & Mentoring Experience

- **Introduction to Computing Systems and Programming** University of Tehran
  Chief Teaching assistant *Oct 2023 - Jun 2024*
  - **C programming**: C Programming, Algorithm Design Introduction, Image Processing
- **Data Mining** University of Tehran
  Teaching assistant *Jan 2024 - Jun 2024*
  - **Data Mining**: Data Warehousing and OLAP

Skills Summary

- **Programming**: Python, C, C++, Matlab, Java, Dart, Web Development(HTML, JavaScript,CSS), SQL
- **Libraries**: Scikit, PyTorch, Numpy, Pandas, TensorFlow, Keras
- **Frameworks**: Spring, Hibernate, flutter
- **Tools**: GIT, MySQL, Thingsboard, Node Red, MQTT, HTTP, REST API
- **Platforms**: Linux, Arduino, Raspberry Pi, ESP32, STM32
- **Language**: English, Farsi (Native)

Volunteer Experience

- **Data Mining Workshop** University of Tehran
  Introduction of Python programming and pandas and numpy libraries and their usage in Data Mining. *Oct 2021*
- **Resana Association** Sharif University
  Spoke on a cloud-based platform for IoMT and remote healthcare *Nov 2021*
- **Tehran Summer 2019** World Cube Association
  Executive secretary for Cubing Competition *Jul 2019*

Licenses & Certifications

- **Battle of Coders**
  MCI *2023*
- **Certified Linux Administrator (LPIC-1)**
  Fanavaran Anisa *2021*
- **IoT BootCamp 99**
  IoT RC *2020*
- **Java EE 8 Programming**
  MFT *2020*
- **Java SE 8 Programming**
  MFT *2019*

References

References available upon request