Seyyed Makan Haji Seyyed Javadi

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Research Interests: Natural Language Processing, Human-Computer Interaction, Algorithms, Theoretical AI/NLP

Education

- **B.Sc., Computer Engineering**, Iran University of Science and Technology *October 2021–September 2025*
  - *GPA:* 19.02/20
- **High School Diploma, Mathematics and Physics**, National Organization for Development of Exceptional Talents (Sampad) *October 2016–September 2021*
  - *GPA:* 19.22/20

Research Experience

- **Analyzing NLP Papers and Delivering Technical Presentations**

  NLP Course Project, Iran University of Science and Technology *September 2024–January 2025*
  - Conducted in-depth analysis of five influential research papers on modern text classification approaches
  - Studied and compared the architectures and methodologies of BERT, Transformer-based models, and LLMs.
  - Investigated the working mechanisms and technical implementations of each model type, and delivered comprehensive presentations on research insights and model comparisons.

Data Analysis Laboratory

Internship, Iran University of Science and Technology *September 2024–January 2025*

- Contributed to a survey paper titled Survey of Propagation Models in Social Networks and Applications, currently under review at ACM Computing Surveys. Focused on classification of propagation models and analysis of their applications.

Selected Projects

- **LoRA Implementation for Emotion Classification** *(Natural Language Processing)*
  - Fine-tuned transformer models using Low-Rank Adaptation (LoRA) for emotion classification.
  - Compared performance with small language models to optimize accuracy and efficiency.
- **Retrieval-Augmented Generation (RAG) System** *(Natural Language Processing)*
  - Designed an end-to-end RAG pipeline integrating document retrieval with an LLM.
  - Improved response quality by combining retrieval precision with generative capabilities.
- **Comparative Analysis of Word Embedding Models** *(Natural Language Processing)*
  - Implemented and evaluated Word2Vec and GloVe embeddings.
  - Visualized high-dimensional word relationships using t-SNE.
- **Decision Tree for Titanic Survival Prediction** *(Artificial Intelligence and Expert Systems)*
  - Built a decision tree from scratch using entropy and Gini index for binary classification.
- **Function Approximation Using Genetic Programming** *(Artificial Intelligence and Expert Systems)*
  - Developed genetic programming algorithm to approximate mathematical functions.
- **Multilayer Perceptron (MLP) for Function Approximation** *(Artificial Intelligence and Expert Systems)*
  - Implemented an MLP neural network for regression and classification tasks.
- **Support Vector Machine (SVM) Classification** *(Artificial Intelligence and Expert Systems)*
  - Applied SVM models with different kernels for text and image classification.
- **Model for Malware Detection Based on Pattern-Matching** *(Design and Analysis of Algorithms)*
  - Developed pattern-matching algorithms to detect malware using hexadecimal signatures.

- **Threading Support in XV6 OS** *(Operating Systems)*
  - Extended XV6 kernel with threading support, including system calls and locks.
- **Theory of Languages and Automata Project** *(Theory of Languages and Automata)*
  - Implemented CYK algorithm and PDA simulator for string acceptance verification.
- **Booth Multiplier and 4-Digit Timer in Verilog** *(Computer-Aided Design)*
  - Designed Booth multiplier and synthesizable 4-digit timer for FPGA implementation.
- **Floating Point Units in gem5** *(Computer Architecture)*
  - Implemented floating-point arithmetic operations in gem5 and verified via assembly tests.

Technical Skills

- **Programming/Modeling Languages:**: C, C#, Python, Assembly, JavaScript, TypeScript.
- **Machine Learning:**: Google Colab, TensorFlow, PyTorch, Scikit-Learn
- **Web/DB Technologies:** Svelte, HTML, CSS, Sass, Chakra UI, MUI, Django Framework, MySQL.
- **Hardware Description Language:** Verilog, VHDL.
- **OS:** Linux, Windows.
- **Other Tools:** Mininet, Cicso Packet Tracer, ANTLR, AVR Studio, Xilinx, Atmel Studio, Git, VMware, Proteus Design Suite, gem5, LaTeX, MATLAB.

Teaching Assistant Experience

- **Iran University of Science and Technology**
  - Information Retrieval and Web Search *February 2025–Current*
  - Theory of Languages and Automata *February 2025–Current*
  - Data Communication *February 2025–Current*
  - Computer-Aided Design *February 2025–Current*
  - Artificial Intelligence and Expert Systems *February 2024–June 2024*
  - Compiler Design *February 2024–June 2024*
  - Theory of Languages and Automata *February 2024–June 2024*
  - Discrete Mathematics *February 2024–June 2024*
  - Electrical Circuits *September 2023–February 2024*
  - Fundamentals of Computer Programming [C/Python] *September 2022–February 2023*
  - Discrete Mathematics *September 2022–February 2023*

Honors and Awards

- **Ranked first among all Computer Engineering students at the end of the first year. (2021 Entrance)**
  - Iran University of Science and Technology *Fall 2022*
- **Ranked third among all Computer Engineering students at the end of the third year. (2021 Entrance)**
  - Iran University of Science and Technology *Fall 2024*

Activities

- **Associated Member of the Iran University of Science and Technology Scientific Association**
  - Computer Engineering Scientific Association (CESA) *Spring 2021–Spring 2022*

Languages

- **English** - Proficient (Listening: 8.5, Reading: 6.5, Writing: 6.5, Speaking: 7.0)
- **Persian(Farsi)** - Native