Ardalan Siavashpour

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EDUCATION

Sharif University of Technology, Tehran, Iran   *2020 – Feb. 2026 (expected)*
Bachelor of Science in Computer Science
Ranked in top 0.5% nationwide in the Iranian University Entrance Examination (Konkoor 2020)

Allameh Tabatabaei High School, Tehran, Iran   *2016 – 2020*
High School Diploma, Mathematics and Physics Track

RESEARCH INTERESTS

- Machine learning and neural networks
- Multi-agent systems and cooperative artificial intelligence
- Reinforcement learning and distributed decision making
- Self-organizing systems for network optimization and management
- Internet of Things and wireless networks

PUBLICATIONS

Manuscripts Submitted

- **A. Siavashpour**, S. Rajabi, and M. Javadian, "Speaker recognition based on Mel-frequency cepstral coefficients using machine learning methods," submitted to the *16th International Conference on Information and Knowledge Technology (IKT)*, 2025.

RESEARCH EXPERIENCE

Undergraduate Research Assistant   *Summer 2024 – Present*
Sharif University of Technology
Supervisor: Dr. Hossein Peyvandi

- Co-author an IEEE-style survey on Self-Organizing Networks (SON) for 4G/5G/6G, including self-configuration, self-optimization, and self-healing functions.
- Conduct literature reviews and synthesize SON subfunctions such as OPC/RAPC, CCO, interference control, backhaul optimization, load balancing, and mobility robustness.
- Write and format major sections of the manuscript and technical figures/tables using LaTeX (IEEE-tran) and TikZ.

Undergraduate Researcher (First Author)   *2025*
Submitted to: 16th International Conference on Information and Knowledge Technology (IKT)
Supervisor: Dr. Mohammad Javadian

- Developed an MFCC-based feature extraction pipeline incorporating first- and second-order temporal derivatives with complementary spectral features.
- Implemented feature selection using SelectKBest with ANOVA F-test for dimensionality reduction.
- Trained and evaluated Multi-Layer Perceptron and Support Vector Machine classifiers on a multi-speaker dataset with a reproducible evaluation methodology.
- Directed the end-to-end research pipeline including data preparation, model development, performance evaluation, and manuscript preparation as first author.

TEACHING EXPERIENCE

Teaching Assistant, Software Engineering   *Fall 2025*
Sharif University of Technology · Instructor: Dr. Mehran Rivadeh

- Conducting weekly recitation sessions covering software design patterns, development methodologies, and software architecture principles.

- Evaluating student projects and assignments on software design, testing strategies, and implementation practices.
- Providing guidance on team-based software development projects and version control workflows.

Teaching Assistant, Computer Networks *Spring 2024*
Sharif University of Technology · Instructor: Dr. Hossein Peyvandi
- Conducted weekly recitation sessions and laboratory exercises covering network protocols and implementation.
- Developed problem sets and examination materials in LaTeX with standardized grading rubrics.
- Maintained automated grading infrastructure and managed the course discussion forum for student support.
- Prepared supplementary instructional materials on TCP congestion control, IP routing algorithms, and transport-layer reliability mechanisms.

Teaching Assistant, Computer Networks *Fall 2023*
Sharif University of Technology · Instructor: Dr. Kambiz Mizanian
- Developed and assigned weekly problem sets and programming exercises.
- Evaluated student performance on examinations and assignments.

SELECTED PROJECTS

Speaker Recognition Pipeline (Classical ML with MFCC Features) *2025*
[GitHub]
- Designed a feature engineering pipeline using MFCCs with first- and second-order temporal derivatives as input to classical machine learning models.
- Built a supervised learning workflow with train/validation/test splits, hyperparameter tuning, and model selection for Support Vector Machine and Multi-Layer Perceptron classifiers.
- Evaluated models using accuracy, precision, recall, F1-score, and confusion matrices to compare classifiers and analyze per-speaker performance.

Online Judge Platform *Spring 2025*
[GitHub]
- Developed a full-stack competitive programming platform with role-based access control for automated code evaluation, supporting problem management, submission tracking, and real-time verdict generation.
- Engineered a secure code execution engine using Docker containerization with enforced resource limits (CPU, memory, network) to safely evaluate Go submissions in isolated sandbox environments.
- Architected a microservices system separating the web application (Gin framework, PostgreSQL) from the judging service, implementing RESTful APIs for scalable submission evaluation.

Real-Time Job-Shop Scheduling System *Spring 2024*
[GitHub]
- Implemented a real-time scheduling system comparing Johnson's algorithm extended for multi-machine scenarios, genetic algorithms, and Deep Q-Learning approaches for job-shop scheduling optimization.
- Evaluated performance metrics across classical and machine learning-based scheduling methods.

Wright-Fisher Population Genetics Simulator *Spring 2024*
[GitHub]
- Developed a computational model simulating genetic drift using the Wright-Fisher stochastic process with visualization of allele frequency dynamics over time.
- Analyzed evolutionary dynamics under various mutation rates and selection scenarios.

Employee Service System Simulation *Fall 2023*
[GitHub] · *Advisor: Dr. Bardia Safaei*
- Constructed a discrete-event simulation modeling an organizational service system with three employee categories and task-switching capabilities.

- Evaluated system performance through analysis of queue length, waiting time, and resource utilization metrics.

Software-Defined Networking Controller   *Spring 2023*
[GitHub]
- Implemented a custom SDN controller using the RYU framework for dynamic network routing management.
- Developed packet route discovery algorithms and flow table population mechanisms.

Peer-to-Peer BitTorrent Network   *Spring 2023*
[GitHub]
- Developed a peer-to-peer file-sharing protocol enabling distributed data transfer with direct peer connections.
- Implemented a tracker-peer communication system with a chunk-based file distribution mechanism.

TECHNICAL SKILLS

Programming Languages: Python, Go, C++, Java, R
Tools & Technologies: Git, Docker, LaTeX, RYU Framework
Operating Systems: Linux (Ubuntu), Windows
Languages: Persian (Native), English (Professional Proficiency)

HONORS & AWARDS

First Place, Allameh Tabatabaei Schools Nanotechnology Competition	*2018*
Medalist, Regional Table Tennis Competition	*2016*
Medalist, Provincial Chess Competition	*2016*