

Omid Zahed

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PROFILE

Software engineer with a strong background in distributed systems, software architecture, and industrial machine learning platforms. I have designed and evaluated distributed microservice architectures, implemented consensus protocols, and built high-throughput backend systems for industrial environments. My recent work includes developing industrial digital-twin and ML pipelines at Caldex, as well as leading the modernisation of a large-scale ERP platform at Anata using clean architectural practices. These research-oriented and production-critical roles have strengthened my focus on scalability, reliability, and system correctness. I aim to pursue graduate study to deepen my theoretical foundations and contribute to advanced work in distributed systems and software architecture.

EDUCATION

- **Islamic Azad University, Tabriz Branch** Tabriz, Iran
B.Sc. in Computer Software Engineering (17.37 / 20) 2021 – 2024

RESEARCH INTERESTS

- Software Architecture and Design
- Distributed Systems and Scalable Platforms
- Software Quality, Maintainability, and Modularity
- Industrial Machine Learning Systems
- Digital Twin Modeling and Simulation
- High-Throughput Data Pipelines

SELECTED TECHNICAL & ACADEMIC PROJECTS

- **Experimental Evaluation of Distributed Microservice Architectures** Independent Research Project, 2025
 - Designed and implemented two distributed backend architectures (synchronous REST-based microservices and event-driven microservices) for a high-throughput order-processing system.
 - Conducted load-testing experiments using Kubernetes, Docker, k6, Prometheus, and Grafana to measure latency (avg, median, P95, P99), throughput, error rate, and stability under increasing workloads.
 - Evaluated fault-tolerance by injecting failures into critical services during peak load and analyzing system degradation, availability, and recovery behavior .
 - Measured CPU and memory footprint under identical traffic levels and constructed scalability curves (Load vs Latency , Load vs Throughput) for cross-architecture comparison.
 - Analyzed trade-offs between architectural styles in scalability, reliability, resource efficiency, and design complexity; documented findings in a technical report .
- **RAFT Consensus Algorithm Implementation** Distributed Systems Project
 - Implemented RAFT leader election, log replication, and stable storage following the formal specification.
 - Built a minimal distributed key-value store to experimentally evaluate fault tolerance and consistency behavior.
- **Time-Series Database for Sensor Data** Independent Systems Project
 - Designed a lightweight time-series database optimized for high-frequency IoT sensor workloads.
 - Implemented compression and windowed-query optimizations and analyzed performance trade-offs.
- **HTTP Server with Script Execution** Computer Networks Project
 - Built an HTTP/1.1 server in Go with routing, parsing, concurrency, and sandboxed script execution.
- **16-Address Computer Architecture** Digital Design Course
 - Designed and implemented an educational 16-address Morris-Mano-style architecture in Verilog.

TEACHING & MENTORING EXPERIENCE

- **Digital Design Laboratory** 2023
Teaching Assistant Islamic Azad University
 - Taught Verilog fundamentals and FPGA development workflow using Intel Quartus.
 - Guided students through lab assignments, simulation, synthesis, and hardware debugging.
- **Git Training Workshops** 2023
Student Instructor Islamic Azad University
 - Delivered introductory Git workshops for new students, covering workflows and collaboration.
- **Internship Training Program** 2023
Instructor / Mentor Islamic Azad University
 - Designed and delivered a practical software internship program for students.
 - Mentored participants on coding standards, debugging strategies, and real-world project structure.

INDUSTRY EXPERIENCE

- **Caldex Pty Ltd** Nov 2024 – Present
Senior Software Engineer Australia
 - **Industrial digital twins & ML:** Work on industrial digital twin and machine learning solutions that combine physical models with empirical data for sectors such as water treatment, oil & gas, mining and manufacturing.
 - **Backend & data workflows:** Design and implement backend services and data workflows for CALDEX's industrial ML platform, integrating predictive models with customer systems.
 - **Dashboards & insights:** Contribute to dashboards and tools that turn complex process data into actionable insights for operators and decision-makers.
 - **Cross-functional collaboration:** Collaborate with engineers and data scientists to bridge the gap between theoretical models and production-ready software, improving efficiency, reducing downtime and supporting smarter decision-making.
- **Nejati Industrial Group Anata** 2025 – Present
Team Lead Tabriz, Iran
 - **ERP modernisation:** Modernising the legacy ERP system of a manufacturing group with 5,000+ employees, focusing on scalability, maintainability and performance.
 - **Architecture:** Redesigning the system using Clean Architecture and ASP.NET Core 9, and restructuring the database to handle large volumes of diverse operational data.
 - **Data migration:** Planning and executing data migration from the old ERP to the new platform while keeping critical business operations running.
 - **Team coordination:** Coordinating the development team to deliver features on a clear timeline for a project of this scale.
- **Islamic Azad University** Mar 2024 – Jan 2025
Senior Software Engineer Tabriz, Iran
 - **Industrial goods platform:** Led development of an online platform for ordering industrial goods and services as part of a joint industry–university project.
 - **Multi-role marketplace:** Built a platform where both individuals and companies could act as buyers or suppliers, supported by a nationwide engineering support network.
 - **Architecture & infrastructure:** Served as main team lead responsible for system architecture, infrastructure design and implementation of core features.
 - **Delivery under constraints:** Coordinated development phases and ensured end-to-end integration under tight deadlines and limited resources, delivering a production-ready version.

- **ParsPack**
 - Software Engineer
 - **Cross-functional teams:** Worked as a remote software engineer in cross-functional teams, learning the impact of effective teamwork, communication and ownership on project outcomes.
 - **DDD & cloud:** Contributed to projects built with Domain-Driven Design (DDD), running on Kubernetes, with tasks managed via Jira in a Scrum workflow.
 - **zaban.com:** Implemented features including authentication, importing learning data from Anki and building video encoding pipelines with FFmpeg.
 - **Core platform:** Refactored and rewrote the SSL module and integrated SSL certificate management across services.

Sep 2021 – Mar 2024
 Tehran Province, Iran (Remote)
- **Novin Parsian Higher Education Center**
 - Programmer
 - **Application development:** Contributed to the development and maintenance of core educational platforms and internal systems.
 - **Feature implementation:** Implemented new features, fixed bugs and improved performance across different parts of the system.

Jun 2021 – Apr 2023
 Tehran, Iran (Remote)
- **Ponisha**
 - Software Engineer (Freelance)
 - **Freelance delivery:** Delivered remote software projects using Laravel, Python, Java, responsive web design and basic blockchain/smart contracts.
 - **Client management:** Improved time management and project planning skills by handling multiple client projects end-to-end.
 - **Non-technical stakeholders:** Worked with non-technical clients to clarify needs and convert business requirements into technical solutions.
 - **Communication:** Strengthened the ability to explain complex technical concepts simply.

Mar 2018 – Sep 2021
 Iran
- **Tahlilgaran**
 - Developer
 - **responsibilities:** Handled backend/frontend tasks and managed Linux servers from deployment to administration.
 - **Modern stack adoption:** Introduced early versions of Laravel and Vue.js to improve maintainability.
 - **Moodle-based product:** Debugged, added features and refactored the Moodle-based education platform.

Jul 2016 – Mar 2018
 Tabriz, Iran

SKILLS

- **Architectural Skills:** Distributed systems, modular design, maintainability engineering
- **Backend & Web:** Go, ASP.NET Core 9, Laravel/PHP, Python, Java
- **Data & ML Systems:** Ray, Apache Spark, ML pipeline integration
- **Infrastructure:** Kubernetes, Docker, Linux servers, CI/CD
- **Research Tools:** Experimental evaluation, performance profiling, simulation
- **Languages:** Turkish (Native), Persian (Native), English (Writing B2, Speaking C1, Listening C1, Reading C1)