Sepehr Vahedi

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Education

Sharif University of Technology   **Sep. 2020 – Jul. 2026 (expected, Co-Op Program)**
B.Sc. in Computer Engineering, Software Engineering   *Tehran, Iran*
- Enrolled in **Co-Op Education Program** with 3-year full-time placement as Software Engineer at **Tapsi**.
- **Overall GPA: 16.51/20** (**17.75/20** in last two years). Achieved while working full-time.
- **Relevant Coursework:** Software Engineering (19.4/20), Software Engineering Lab (20/20), Web Programming (20/20) Systems Analysis & Design (20/20), Compiler Design (19.8/20), Data Structures & Algorithms (19.4/20)

Research Interests

- AI for Software Engineering
- Distributed Systems
- Software Quality
- Automated Testing
- Program Analysis
- Formal Methods

Research Experience

Software Quality Research Lab 🌐   **Aug. 2025 – Present**
Research Assistant, Supervised by Prof. Seyed-Hassan Mirian-Hosseinabadi   *Sharif University of Technology*
- *Research focus: Multi-agent LLM framework for automated test generation with structural deduplication.* ⓞ
- **B.Sc. Thesis:** Achieved **94% coverage** on 2,200+ Python functions via multi-agent LLM test generation.
- **Deployed live production system:** ⧉ **testcouncil.com** – fully functional test generation platform.
- Semantic clustering algorithm for test deduplication, reducing redundant test cases by **72%**.

Intelligent Software Engineering Lab 🌐   **Mar. 2025 – Present**
Research Assistant, Supervised by Prof. Abbas Heydarnoori   *Sharif University of Technology*
- *Research focus: Automated GitHub issue title generation from body text, labels, and metadata using LLMs.*
- Reduced LLM input token costs **37.3%** using deep learning model trained on textual similarity and linguistic features.
- Maintained semantic quality within **0.4%** of GPT baseline (BERTScore: 0.877 vs 0.873) on **2.6M+ GitHub issues**.
- Benchmarked against T5, RAG, GPT using BLEU, ROUGE, METEOR, BERTScore. *Paper in preparation.*

Industry Experience

Tapsi (Ride-Hailing Platform, 10M+ Monthly Users) (🌐, in)   **Feb. 2022 – Dec. 2024**
Software Engineer (Co-Op Program), Supervised by Mahdi Bohloul & Sina Shahhoseini   *Tehran, Iran*
- **Doubled daily deliveries** by architecting Kafka-based event-driven microservices for parallel delivery platform.
  — Built scalable backend handling **1M+ daily events** with sub-100ms latency via reactive Spring Boot.
- **Co-developed Iran's first school transport platform** managing 2K+ drivers and 12K+ students.
  — Designed multi-app ecosystem with offline AI matching, achieving **95% route optimization**.
- **Cut infrastructure costs 45%** migrating monolithic Node.js service to reactive Spring Boot with zero downtime.
  — Reduced response times from **200ms to 80ms** at peak load using Project Reactor non-blocking I/O.
- **Reduced GPS service load 67%** via dynamic polling algorithms, data filtering and caching strategies.
- Led workshop on AI-assisted development, integrating ChatGPT/Copilot into team workflow. Workshop Materials ⧉

RabinCash (Pioneering Cryptocurrency Exchange) (🌐, in)   **Feb. 2020 – Feb. 2021**
Co-Founder & Product Designer   *Tehran, Iran*
- **Co-founded one of Iran's first crypto exchanges** with dual P2P/B2P platforms supporting 20+ trading pairs.
- Designed end-to-end trading UX from concept to launch, driving user acquisition and transaction workflows.

Teaching Experience

Sharif University of Technology   **Tehran, Iran**
Teaching Assistant – Scientific and Technical Presentation   *Sep. 2025 - Present*
Teaching Assistant – Advanced Programming   *Feb. 2024 - Jul. 2024*

National Organization for Development of Exceptional Talents   **Sep. 2020 – May 2021**
Informatics Olympiad Teacher – Competitive Programming (Algorithms & Optimization)   *Tehran & Mashhad, Iran*
- Taught algorithm design and C++ to gifted high school students preparing for national/international competitions.
- Achieved **Candidate Master rank** (top 1.5% worldwide) and solved **400+ problems** across two Codeforces accounts during high school: Candidate Master Profile, Expert Profile.

Technical Skills

Programming Languages: Python, Java, Kotlin, C++, JavaScript/TypeScript (Node.js), Go, R

Software Engineering: Spring Boot, Project Reactor, Microservices, Event-Driven Architecture, RESTful APIs, gRPC, OAuth2.0, Test Driven Development, Domain Driven Development, Requirement Engineering

AI/ML & NLP: PyTorch, Hugging Face, Transformer Models, LLM Fine-tuning, RAG Systems, Embeddings, NLTK

Testing & Quality: JUnit, Mockito, Selenium, Test Automation, Coverage Analysis

Data Systems: MongoDB, PostgreSQL, Redis, Kafka, Hazelcast, Vector Databases

DevOps & Cloud: Docker, Kubernetes, ArgoCD, GitLab CI/CD, Istio, Envoy Proxy, Prometheus, Grafana

Data Science: Pandas, NumPy, Scikit-learn, Statistical Analysis

Selected Projects ○ More projects

TestCouncil - Multi-Agent Test Generation Platform ○ ⬈ (testcouncil.com)
- **Deployed production-grade platform** generating unit tests for 2,200+ Python library functions.
- Achieved **94% code coverage** using collaborative LLM agents with semantic deduplication algorithms.
- Reduced redundant test cases by **72%** through embedding-based clustering and similarity detection.

Multi-Agent Academic Paper Review System ○
- **Automated peer review scoring with 85% accuracy** via distributed LLM agents and voting.
- Investigated bias reduction techniques across GPT-4, Claude, and Gemini for paper evaluation.

Real Estate Data Integration Platform 🔒 *(Confidential industry project with Air Properties Dubai)*
- **Built ETL pipeline for 10K+ listings** with semantic search and automated validation.
- Delivered 40% faster property matching via RAG-based recommendation engine serving 500+ queries/day.

Honors & Awards

Iran National Olympiad in Informatics (INOI) – Top 50 Finalist (2 Consecutive Years)	**2018, 2019**
AUT International Programming Contest 🌐 – 3rd Place among 65 Teams	**2019**
Sharif AI Challenge 🌐 – 3rd Place (Mini Games), 5th Place (Main Competition)	**2019**

Languages

English : Advanced - **IELTS 8.0 Overall** (Listening: 8.0, Reading: 8.5, Writing: 7.0, Speaking: 7.5)

German : Intermediate

Persian : Native

References

1. **Dr. Abbas Heydarnoori**
   Associate Professor, Department of Computer Engineering, Sharif University of Technology, Iran
   Research Supervisor at ISE Lab
   ✉ heydarnoori@sharif.edu   🌐 Website

2. **Dr. Seyed-Hassan Mirian-Hosseinabadi**
   Associate Professor, Department of Computer Engineering, Sharif University of Technology, Iran
   Research Supervisor at SQR Lab
   ✉ hmirian@sharif.edu   🌐 Website

3. **Mahdi Bohloul**
   Senior Team Lead - Head of Backend, Tapsi Delivery
   Direct Supervisor at Tapsi
   ✉ mahdi.bohloul@tapsi.cab   in LinkedIn   ○ GitHub

4. **Sina Shahhoseini**
   Engineering Lead, Raisin, Germany (Former Engineering Manager at Tapsi)
   Direct Supervisor at Tapsi
   ✉ sina.shahhoseini@raisin.com   in LinkedIn