

Hamid Jafari-Zadeh

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Summary

AI Systems Architect and Learning-Centric Builder specializing in **Auditable AI** and **Cognitive Governance**. Bridges **first-principles research** with **hands-on engineering**, leveraging 15+ years in **resilient, large-scale systems** and **intelligent tool design**. Designed tools that don't just solve tasks, they learn from them.

Methodology involves performing a broad problem scan (Horizontal) to choose the optimal architectural thread, followed by deep, production-grade execution (Vertical).

Skills & Tools

Languages: Python, React, TypeScript, Bash

Frameworks/Libraries: FastAPI, Flask, NetworkX, Numpy, LangChain & llama-index **ML/AI:** scikit-learn, spaCy, GPT APIs, Transformers

Infrastructure: Linux, Git, Zabbix, Docker, Ansible

Visualization: Matplotlib, seaborn, PlantUML

Other: LaTeX, Markdown, SQLite

Experience

AI System Architect & Research Engineer (Self-Employed / Consulting & Research)

Berlin, Germany, 2024–Present

- Designed and shipped adaptive, memory-enabled AI systems with **reproducibility**, model/data versioning, **CI/CD for ML**, and observability—bridging first-principles research with production-minded engineering.
- **Auditable AI Governance (Architect):** Orchestrated and implemented a reference architecture featuring a **Policy-as-Code Gateway** to vet every memory operation, ensuring user-defined rules and accountability.
- **Cognitive Observability (NeuroTrace):** Created a **deterministic analytics framework** (Python/NetworkX) to model the structural evolution of AI personalization, enabling reproducible analyses and auditable behavior trails.
- **Production Agentic Workflows (Communication Agent):** Developed a stateful, backend-first AI agent using **FastAPI** and **SQLAlchemy** for secure, human-in-the-loop email triage.
- **Strategic UI Core (MD Grid Engine):** Led development of a Next.js + runtime MDX compiler (**TypeScript/React**) powering the portfolio, designed for visualizing complex AI decision traces.
- Delivered Research-Backed Blueprints, successfully bridging academic inquiry with production demands to prioritize **trust, resilience, and measurable integrity**.

Systems Monitoring Engineer & Automation

Adjust GmbH, Berlin, Germany

2020 – 2024

- **Architected Operational Intelligence:** Developed and deployed a custom incident alerting pipeline, combining **Python**, Zabbix, Slack, and Grafana APIs to close monitoring gaps leading to faster anomaly detection.
- Developed a simulation-driven post-incident analyzer using GPT APIs, auto-generating structured postmortems from live data streams and root cause patterns.
- **Served as Incident Commander** for **critical outages**, successfully reducing **Root Cause Analysis (RCA) time by 30%** and enforcing operational resilience protocols.
- **MLOps Foundation:** Managed 300K+ system metrics and developed Python scripts for data integration, establishing a **strong bias for observability, versioning, and clear rollback paths** (core principles of Auditable AI).
- Mentored 5+ team members in monitoring strategies, fault detection models, and system reliability practices.

Lead Platform Engineer

PardakhtNovin Arian Co. (PNA), Tehran, Iran
2018 – 2019

- **Delivered Mission-Critical Resilience:** Led HA redesign and recovery script development, boosting Linux infrastructure availability from 84.6% to **99.5%** for payment systems.
- **Applied Strategic Vision (Horizontal Scan):** Consolidated infrastructure by auditing 40+ legacy servers, reducing technical debt, and freeing up **20% of capacity** for R&D environments.
- **Enforced Security Governance (Vertical Application):** Automated **NIST SP 800-123 server hardening** with a 3000+ line Bash framework, achieving full audit compliance and cutting deployment time by 80%.
- **Architectural Leadership:** Mentored junior engineers and explored early containerization pilots, instilling foundational **systems thinking** and operational best practices.

Infrastructure Engineer

Pasargad Electronic Payments (PEP), Tehran, Iran
2013 – 2018

- Maintained national-scale POS infrastructure serving over 650,000 devices and processing ~5 million transactions per day across distributed financial networks.
- Increased system uptime from 85% to **99.5%** by developing auto-recovery scripts and deploying custom monitoring and alerting workflows.
- **Reverse Engineering & Cost Savings:** Reverse-engineered IntelliNAC payment concentrators (custom Linux HDLC routers) to create a reliable, resource-efficient monitoring solution, **saving ~\$18K/year** in vendor license costs.
- Designed and implemented high-availability (HA) and failover systems to ensure consistent service delivery across mission-critical systems.
- Built a custom real-time tracking and diagnostics dashboard in SharePoint for internal teams, improving response time and **observability**.
- Led a team of 3 engineers and standardized technical documentation and operational procedures for infrastructure resilience.

Early Career Foundation

Foundation in Systems Engineering & Automation

Multiple Roles: IT Solution Specialist, Network Administrator, Developer
Iran, 1998 – 2014

- **High-Availability Networking:** Designed and implemented resilient LAN/WAN networks and **HA and failover solutions** for multiple enterprises and ISPs, ensuring consistent service delivery.
- **Developer Foundation (1998-2008):** Cultivated an early habit of **algorithmic thinking**, **C++/Delphi structured programming**, and debugging while developing data-centric and multimedia software.
- **Rural Infrastructure Deployment:** Led field teams and technical deployments for remote radio towers and wireless ISP infrastructure, gaining critical expertise in **infrastructure-limited environments**.
- **Operational Discipline:** Developed real-time monitoring and alerting strategies using **Zabbix and Grafana** for service continuity, laying the groundwork for all future automation and monitoring work.
- **Cross-Domain Integration:** Built backend infrastructure to support ERP and enterprise software deployments, ensuring data integrity and operational continuity.

Education

AI Project Expert (Weiterbildung)

Internationale Hochschule Akademie, Berlin, Germany
Jan 2025 - Sep 2025

BSc. Software Engineering

PNU, Iran
2011

Languages

- **Persian (Farsi):** Native
- **English:** Advanced / C1 – Proficient in professional and technical communication
- **German:** A2 – Basic communication, currently improving

Projects

NeuroTrace: Cognitive AI Analytics Framework

2024

- Built a modular simulation framework (Python, **NetworkX**) for graph-based modeling of memory-aware assistant behavior and cognitive function.
- Used the framework for academic research to analyze personalization, zone transitions, and **structural emergence** in large language models.
- Focused on **deterministic analytics** and auditability, establishing a pipeline for reproducible research and behavior trails.

Architect MVP System: Auditable AI Governance Blueprint

2025

- Led the full design and implementation of Architect, a blueprint-driven AI system demonstrating **cognitive governance** and modular learning zones.
- **Security & Audit PASS:** Achieved a **100% audit pass rate** on all redteam security tests (PII, Prompt Injection, Exfiltration) and implemented a complete audit trail.
- Designed a reference architecture to enforce **Policy-as-Code** for all memory operations, ensuring user-aligned autonomy and auditable transparency.
- **Architectural Success / Performance Failure:** Diagnosed critical P95 latency (132s vs. 12s SLO) and isolated the root cause to **local M1 Pro development hardware** (model switching, memory constraints), validating the system’s design but proving necessity for **dedicated server deployment**.
- **Note:** Focus is on governance and explainability. System is infrastructure-ready but requires server-grade memory and GPU for production SLOs.

Communication Agent MVP1: Stateful AI Triage System

2024

- Engineered a production-grade, backend-first agent (Python, **FastAPI**) for secure, human-in-the-loop email triage.
- Implemented a robust architecture using **SQLAlchemy** for state management and ****typed output schemas**** to ensure reliable downstream automation.
- Applied retrieval-augmented generation (RAG) techniques to dynamically construct context windows and maintain thread continuity.