

# Mohak Rathod

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## EDUCATION

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### Arizona State University

Master of Science in Computer Science — GPA: 4.00

Tempe, AZ

Aug 2025 – May 2027

– Coursework: Computer Architecture, Statistical Learning Theory, Cloud Computing, Planning and Learning Methods of AI

### University of Mumbai

Bachelor of Technology in Computer Science and Engineering (IoT, Cybersecurity & Blockchain) — CGPA: 9.04/10

Mumbai, India

Jun 2025

## TECHNICAL SKILLS

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**Languages:** Python, Go, Rust, C++, Java, JavaScript/TypeScript

**AI/ML:** PyTorch, TensorFlow, Scikit-learn, LangChain, LangGraph

**Backend & Infra:** FastAPI, Flask, gRPC/Protobuf, REST APIs, Docker, Kubernetes, RabbitMQ

**Databases:** PostgreSQL, MongoDB, Redis, Neo4j, MySQL

**Cloud & Tools:** AWS, GCP, Prometheus, Grafana, Git, Jupyter, Jira

## PROJECTS

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### Self-Healing Distributed AI Training Cluster | Python, gRPC, FastAPI, Docker, PyTorch

Ongoing

- Built a Docker-based master-worker system where nodes communicate via gRPC and send periodic heartbeats; master detects failures and reassigns tasks automatically without manual intervention.
- Maintained training correctness across arbitrary node failures using checkpoint-driven recovery and All-Reduce gradient synchronization.

### Distributed Rate Limiter Service | Go, gRPC, Redis, Kubernetes, Prometheus, Grafana

Feb 2026

- Implemented a token-bucket rate limiter in Go + gRPC; benchmarked at 3,000 req/s with 1.57ms average latency and 100% success rate across 60,000 requests under sustained load.
- Coordinated per-client token state across instances via Redis; p99 latency held under 12ms at peak load; deployed on Kubernetes with Prometheus/Grafana monitoring and metrics-based auto-scaling.

### VulnGraph — LLM-Assisted Application Security Platform | Python, Neo4j, Streamlit, Docker

Ongoing

- Built an open-source ASPM platform integrating Gitleaks, Trivy, and Bandit scanners; stores findings in Neo4j and models vulnerabilities as attack graphs with interactive Pyvis visualizations.
- Integrating phi3 using ollama to generate plain-English vulnerability explanations and remediation suggestions; CI/CD scanning via GitHub Actions on every push/PR.

### Multi-Agent LLM Orchestration Framework | Python, LangChain

Oct 2025

- Designed cooperative LLM agents with explicit task routing and shared state for data synthesis and summarization workflows.
- Optimized inter-agent communication pipeline, reducing multi-query inference latency by 35%.

## RESEARCH

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### Strengthening AI-Powered URL Classification using MMAUC (In Review)

Aug 2024 – May 2025

- Developed an ensemble ML pipeline for malicious URL detection achieving 93% accuracy and 18% fewer false positives over baseline.
- Improved class balance by 22% using GAN-based data augmentation, increasing model robustness on imbalanced datasets.

### Blockchain-Powered Decentralized File Sharing | <https://doi.org/10.53555/AJBR.v27i6S.5138>

Aug 2023 – Dec 2024

- Designed a decentralized file-sharing platform using IPFS, AES encryption, and blockchain for tamper-evident, encrypted distribution.

### Votix — Blockchain-Based Secure Voting System (In Publication)

Aug 2022 – May 2024

- Designed a decentralized voting system using blockchain-based smart contracts with integrated facial recognition for voter authentication, ensuring tamper-proof, auditable elections while preventing duplicate voting in a trustless environment.

## WORK EXPERIENCE

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### Syntel Pvt. Ltd. (Atos/Eviden Group)

Mumbai, India

SOC Analyst Intern

Jun 2023 – Aug 2023 | Jul 2024 – Aug 2024

- Monitored and triaged enterprise security alerts using IBM QRadar, ArcSight Logger, LogRhythm, and Zscaler across two summer rotations.
- Supported incident escalation, security rule evaluation, and weekly reporting via Power BI in collaboration with L1/L2 analysts.