

# SWAPNIL SURDI

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## Professional Summary

Senior Software Engineer with 8+ years architecting scalable backend systems and cloud-native microservices handling 100K+ daily requests with 99.9% uptime. Expert in Python, Go, AWS, React, and AI system integration (MCP). Proven leadership in performance optimization, automation frameworks, and regulatory compliance (ISO 13485, HIPAA), with formal QA training and track record mentoring engineering teams.

## Technical Skills

- **Languages:** Python, Go, JavaScript, TypeScript, Java
- **Frameworks / Message Queues:** Django, React, Spring Boot, Node.js, FastAPI, Kafka, RabbitMQ, SQS
- **Architecture & APIs:** Microservices, RESTful APIs, Event-Driven Systems, GraphQL
- **Cloud/DevOps:** AWS (ECS, Fargate, Lambda), Docker, Kubernetes, CI/CD (GitHub Actions), Unix/Linux/macOS
- **AI/ML:** Model Context Protocol (MCP) Server Development, AI Tool Integration, LLM Applications
- **Testing & Quality Assurance:** QA Methodologies, Test Automation Frameworks, White-box Testing, Selenium, Maestro
- **Databases:** PostgreSQL, MongoDB, Redis, MySQL, DynamoDB, SQLite
- **Compliance & Standards:** ISO 13485, IEC 62304, HIPAA, GDPR, ISO 27001, 21 CFR Part 11
- **Monitoring:** Observability, Logging, Performance Optimization, System Profiling

## Professional Experience

### Treatment Technologies & Insights

Sep 2021 - Jul 2025

Senior Software Engineer (Full-Time)

Remote

- Architected enterprise AI/MCP ecosystem with ISO 13485 Quality Management and HIPAA-compliant Healthcare Data systems, integrating Slack, GitHub, Jira, and Confluence - reducing onboarding time by 75% with automated compliance workflows and in-house eQMS
- Designed scalable microservices architecture handling 100K+ daily API requests, implementing event-driven systems with Kafka/RabbitMQ for real-time data processing, achieving 99.9% uptime through distributed system design and circuit breaker patterns
- Built high-performance data pipelines using Python and Go, processing medical imaging data with optimized algorithms that reduced MRI viewer load times from 8 minutes to 30 seconds through systematic profiling, caching strategies, and parallel processing
- Led backend infrastructure modernization: Migrated monolithic applications to containerized microservices using Docker and AWS Fargate, reducing costs by 35% while improving response times by 50%
- Owned product testing strategy: Created Go-based automation framework with comprehensive test coverage (85%), automated testing pipelines using Maestro for iOS/Android, and white-box testing methodologies reducing manual testing by 40%
- Engineered RESTful and GraphQL APIs with comprehensive documentation, implementing OAuth 2.0 authentication, rate limiting, and API versioning strategies serving React frontend applications and third-party integrations
- Mentored junior engineers and led knowledge-sharing sessions on system design, cloud optimization, and testing best practices

### Beamlink Inc

Aug 2020 - Sep 2021

Lead Network Engineer (Full-Time)

Remote

- Designed disaster-resilient mesh network architectures using Python and OLSR protocol for bandwidth-constrained, power-sensitive applications
- Built simulation and testing tools using Python for comprehensive network performance analysis and validation
- Debugged and optimized physical tower hardware devices, conducting system-level testing of antenna configurations and power-efficient protocols in bandwidth-constrained environments
- Developed algorithms for dynamic tower selection and node-hopping to maintain reliable connectivity in low-signal environments
- Contributed to technical research resulting in the patent 'Fixed Base Station Antenna System using MIMO Configuration' (US20240129000A1)

### Apprely Technologies

Oct 2016 - Jun 2018

Application Developer (Full-Time)

Pune, India

- Developed Android applications and backend services with secure data pipelines using Kafka/RabbitMQ, implementing comprehensive testing strategies

- Built financial automation platform for Entryless, integrating QuickBooks, Zoho Books, Intuit services, and Plaid APIs with automated validation workflows for tax preparation and financial record management
- Maintained and optimized mobile applications including Sahyadri Treks App and Care Turtle App

#### Accenture Services Pvt Ltd

Oct 2015 - Oct 2016

Associate Software Engineer (Full-Time)

Pune, India

- Automated testing for Virgin Media UK using Selenium and Java, contributing to a 2-month manual effort reduction through comprehensive test automation framework
- Received Accenture's 'Ace Award' for outstanding contributions to automation and process efficiency
- Completed Accenture's comprehensive QA Specialist certification program covering functional, regression, performance, and security testing methodologies

## Additional Experience & Projects

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#### Beamlink Inc - Research & Development Contract Engineer

Oct 2022 - Jul 2023

Part-Time Contract (concurrent with TTI full-time role)

Remote

- Continued R&D work on mesh network optimization and hardware testing while maintaining full-time role at TTI
- Performed hardware-level debugging on mesh network tower devices, troubleshooting power consumption and signal transmission

#### Independent Contractor - Software Development

Dec 2019 - Feb 2021

Contract Projects (during graduate studies)

Remote

- Architected scalable dealership platform for Nissan Torso Car Dealership using Django and React, leading team of 3 engineers
- Engineered experimental web platform for AI Study - Open Sesame Social Ties research, studying human trust in AI recommendations
- Delivered complete web solutions for manufacturing businesses with comprehensive testing and validation

#### USC Marshall Center for Global Supply Chain Management

Mar 2019 - May 2020

Technology Specialist (Part-Time, during graduate studies)

Los Angeles, CA

- Managed website infrastructure, security implementations, and hosting environment optimization on Unix/Linux systems
- Ensured seamless technology integration at conferences and events

#### Beamlink Inc - Radio and Systems Engineer Intern

Mar 2020 - May 2020

Internship (during graduate studies)

Remote

- Initial internship developing simulation tools for mesh network performance analysis

## Education

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#### University of Southern California

2018 - 2020

M.S., Astronautical Engineering

Los Angeles, CA

- GPA: 3.5

#### MIT, University of Pune

2011 - 2015

B.E., Electronics & Telecommunication Engineering

Pune, India

- GPA: 3.5

## Certifications

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- Lean Six Sigma Green Belt - USC Marshall School of Business
- Quality Assurance Specialist Training - Accenture
- Monday.com Advanced Workflow Certifications
- HIPAA & GDPR Compliance Certifications (Annual Renewals: 2022-2024)

## Patents & Publications

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- **Patent:** "Fixed Base Station Antenna System using MIMO Configuration" - US20240129000A1 (2024)
- **Publication:** "Space Situational Awareness through Blockchain Technology" - Journal of Space Safety Engineering (2020)