ABHIJEET GAJJAR

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LinkedIn | GitHub | Portfolio

SUMMARY

Software engineer with 6 years building production backend services and integrating software with physical devices — the intersection of autonomous software execution and instrument control. Designs Python APIs and microservices with real users and end-to-end uptime ownership, builds automated high-throughput data pipelines across environments, and has implemented device-integration software that discovers IoT peripherals over Bluetooth Low Energy, streams live sensor telemetry, and reconciles state after connectivity loss. Works hands-on with embedded hardware, interfacing sensors and peripherals on Raspberry Pi and Texas Instruments boards over GPIO, I2C, SPI, UART / serial (RS-232), and USB. Builds LLM agent systems that execute multi-step tasks autonomously and surface failures for diagnosis. M.S. Information Technology (4.0 GPA, 2025), currently pursuing a D.B.A. in Applied Computer Science with doctoral research on on-device LLM architectures and security safeguards for private data, with applied machine learning and computer vision experience and a test-driven approach that has cut production defect rates up to 70%.

TECHNICAL SKILLS

Languages: Python (FastAPI, Flask, Django), Java (Spring Boot), JavaScript / TypeScript (Node.js, Express.js), C++, SQL (PostgreSQL, MySQL, SQLite), Bash / Shell Scripting, Swift, Objective-C, Kotlin, Dart, HTML5, CSS3. Working knowledge: Go, Rust

Backend & APIs: FastAPI, Flask, Django, Spring Boot, Node.js, Express.js, RESTful API design and versioning, GraphQL, WebSockets, microservices architecture, asynchronous and concurrent task execution, API authentication, authorization, and access control (OAuth, API keys), error handling and retry logic, end-to-end system ownership

Embedded & Low-Level Protocols: Raspberry Pi, Texas Instruments embedded platforms, single-board computers and microcontrollers, GPIO, I2C, SPI, UART / serial (RS-232), USB, sensor and peripheral interfacing, embedded Linux, Python on device, hardware prototyping and MVP builds

Device & Systems Integration: Core Bluetooth, Bluetooth Low Energy (BLE), Android BLE, IoT peripheral discovery and connection management, hardware abstraction over device communication protocols, real-time sensor telemetry streaming, instrument data acquisition, offline persistence with automatic reconnect synchronization, TCP/IP, WebSockets, third-party SDK and vendor programming interface integration, webhook and event-driven workflows, cross-platform interoperability

Platforms: iOS, iPadOS, watchOS, macOS, Android, embedded Linux (Raspberry Pi OS); native development in Swift, Objective-C, and Kotlin; cross-platform with React Native and Flutter; UIKit, SwiftUI, Core Data, Core Bluetooth, Core ML, Vision, AVFoundation, ARKit, MapKit, WatchKit, PushKit; Xcode, Android Studio, Fastlane, App Store and Play Store release

Data, Pipelines & Provenance: PostgreSQL, MySQL, SQLite, MongoDB, Redis, Snowflake data warehousing, Core Data, Azure Data Pipelines, ETL and staging-to-production automation, high-throughput data acquisition and ingestion, relational database design, shared schema design for interoperability, metadata and run-level traceability, data synchronization and integrity across environments, Pandas, NumPy

Cloud, Reliability & Remote Operations: AWS (Lambda, S3, API Gateway), Microsoft Azure, Google Cloud Platform, Docker, Kubernetes, CI/CD, Jenkins, zero-downtime deployment, fault tolerance and graceful degradation, uptime ownership, application logging and monitoring, crash-log triage, incident troubleshooting and remote user support, cloud-accessible service design

Testing & Validation: Test-Driven Development (TDD), Behavior-Driven Development (BDD), unit, interface, and integration testing, XCTest, code coverage analysis, automated regression testing, defect root-cause analysis, Agile and Scrum

AI / ML & Autonomous Systems: PyTorch, TensorFlow, Scikit-learn, OpenCV, Hugging Face, computer vision, object detection, image processing, real-time on-device inference, model quantization, Core ML conversion, LLM-backed applications, agentic systems, autonomous multi-step task execution, agent orchestration (LangChain, LangGraph), tool-use frameworks, function calling, retrieval-augmented generation (RAG), embeddings, vector databases (Pinecone, ChromaDB), training-data pipeline construction, run-status and failure surfacing for autonomous runs

Frontend: React, React Native, JavaScript/TypeScript, HTML5/CSS3, user-facing monitoring dashboards

CS Fundamentals: Data structures, algorithms, complexity analysis, concurrency, distributed systems, object-oriented design, design patterns

PROFESSIONAL EXPERIENCE

Full Stack Engineer | Pilot AI Labs, Newport Beach, CA **June 2026 – July 2026**

- Delivered a production commerce application from zero to a shipped release within one month by architecting a client application against a serverless AWS Lambda backend.
- Integrated third-party vendor programming interfaces, including Stripe payment processing and the 3DLOOK body-measurement API, behind REST service endpoints with webhook handling for asynchronous state updates.
- Removed per-request server inference and hosting cost from a production pipeline by prototyping on-device Core ML and Vision inference as an alternative to the hosted service.

Software Engineer | Propbase LLC, Minneapolis, MN **Aug 2024 – June 2026**

- Sustained zero downtime during scaling events under rising user load by architecting horizontally scalable RESTful APIs serving real users on Azure, owning the supporting backend infrastructure end-to-end.
- Cut manual processing overhead 40% by engineering Python and FastAPI microservices that execute natural-language tasks autonomously through LangChain and LangGraph agent orchestration.
- Compressed deployment effort 60% and eliminated manual migration errors across environments by automating staging-to-production data workflows in Azure Data Pipelines.
- Lifted user engagement 30% by integrating Firebase Cloud Messaging for real-time push delivery and optimizing the client rendering pipeline.

Software Engineer | Cygnet Infotech, Ahmedabad, India **May 2022 – Apr 2023**

- Architected reusable object-oriented components for IoT device applications adopted by four enterprise clients, improving codebase scalability and maintainability across deployments.
- Drove a 70% reduction in crash rates across production applications by instituting test-driven development with XCTest and optimizing code paths ahead of release.
- Increased user engagement metrics 25% through third-party systems integration, connecting external RESTful APIs and vendor services that expanded application functionality.

Software Engineer | BeLocum, Québec, Canada **Mar 2020 – Apr 2022**

- Engineered machine-learning computer-vision features in PyTorch and TensorFlow for real-time object counting, packaging trained models for on-device inference.
- Improved runtime efficiency 20% and enabled a launch reaching 100,000+ registrations and 10,000 daily active users by migrating a legacy Objective-C codebase to Swift through incremental module bridging.
- Raised measured system stability 50% and user satisfaction scores 60% by root-causing and resolving 50+ critical runtime defects through systematic debugging and crash-log triage.
- Accelerated developer productivity 25% by authoring a custom component library that standardized reusable interface elements across the product.

Software Engineer | Ecosmob Technologies, Ahmedabad, India **Feb 2019 – Jan 2020**

- Reduced crash rates 20% across 10+ production applications by authoring unit and UI test suites that resolved defects systematically and by hardening RESTful API data-retrieval paths.
- Standardized application performance consistency across platform versions by troubleshooting version-specific defects and implementing optimizations surfaced through cross-functional team design discussions.

PROJECTS & HARDWARE PROTOTYPING

Embedded Sensor Prototyping — Personal Projects **Raspberry Pi · Texas Instruments · Python · Embedded Linux**

- Built working hardware prototypes and MVPs on Raspberry Pi and Texas Instruments boards by interfacing sensors and peripheral devices over GPIO, I2C, SPI, UART / serial (RS-232), and USB, acquiring and processing device data in Python on embedded Linux.

Bluetooth IoT Sensor Instrumentation Dashboard **Core Bluetooth · BLE · Swift · Kotlin · REST · SQLite**

- Delivered a cross-platform instrument-monitoring application to two enterprise clients by implementing peripheral discovery and connection management over Core Bluetooth and native Android BLE, acquiring live temperature and gas sensor data from IoT hardware, persisting readings locally for fault-tolerant offline operation during connectivity loss, and automatically reconciling buffered state with REST APIs on reconnect.

Real-Time ML Object Detection Pipeline **PyTorch · TensorFlow · Core ML · Swift**

- Achieved 30 fps on-device inference by building an end-to-end computer-vision pipeline in PyTorch and TensorFlow, converting trained models to Core ML, and applying quantization tuned to hardware constraints.

EDUCATION

D.B.A., Applied Computer Science | Westcliff University, Irvine, CA **Expected 2029**

In progress — doctoral research on on-device LLM architectures and security safeguards for private data: keeping inference local so sensitive data never leaves the device, and the privacy and trust guarantees that follow structurally from that design.

M.S., Information Technology | Westcliff University, Irvine, CA **June 2025**

GPA: 4.0 / 4.0

B.E., Information Technology | Gujarat Technological University, India **June 2017**