Bhavin Shah
AWS | Firmware | IoT | Backend | Embedded | SQL | Gen AI
USA | **H-1B Transfer Available** | Open to Contract / Full-Time
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Professional Summary

Senior Software Engineer with 14+ years of experience developing and integrating software solutions across **embedded/connected appliances, IoT, cloud platforms, and distributed systems**. Currently working on smart-appliance software at Whirlpool, delivering Android HMI, appliance connectivity, device-cloud integration, provisioning, OTA, factory reset, Wi-Fi, and commercial laundry solutions.

Technical Skills

- **Programming Languages & Frameworks**: C++, C#, Java, Android, Python, JavaScript, SQL, REST APIs
- **Cloud Services**: Azure IoT Hub, Azure Function, Azure AI Search, Azure OpenAI, Azure Event Hub, Azure Service Bus, Azure Stream Analytics, Azure Key Vault, DPS, API Gateway, Azure AD, App Service, Data Bricks & Spark, Kafka
- **API Development**: RESTful APIs,. NET Core, Web API, Swagger/OpenAPI, API Versioning, OAuth 2.0, JWT, NUnit
- **Architecture Patterns**: MVC, MVVM, Microservices, Repository Pattern, Dependency Injection, Clean Architecture
- **Databases & Storage**: Azure SQL Server, Cosmos DB, Postgresql, MS SQL, Azure Data Lake
- **DevOps, CI/CD & Methodologies**: Azure DevOps Pipelines, GitHub Actions, YAML, Git, Azure Repos, Agile (SCRUM)
- **Generative AI**: Azure OpenAI SDK, RAG, Prompt Engineering, LLM, Embedding, Vectorization, LangChain
- **Tools & IDEs**: Visual Studio, VS Code, Postman, Fiddler, Azure CLI, Azure Storage Explorer, SonarQube, Figma

Professional Experience

Einfochips (Whirlpool Corporation) **Mar 2021 - Present**
Senior Embedded Engineer *Benton Harbor, MI*
Project: Smart Cooking Appliance

- Develop and integrate software for connected smart-appliance platforms, collaborating across embedded, firmware, hardware, connectivity, cloud, and product teams to deliver reliable appliance features and system-level functionality.
- Design, implement, debug, and integrate Android-based HMI software for smart appliances, including cooking controls, timers , settings, appliance state management, and far-view/near-view user experiences.
- Troubleshoot complex device-to-device and system integration issues, analyzing application logs, appliance events, supervisor states, lifecycle behavior, and communication sequences to identify root causes and drive corrective actions.
- Work closely with firmware, hardware, connectivity, and cloud teams to investigate appliance state synchronization, door even ts, factory reset behavior, Wi-Fi provisioning, connectivity failures, and device lifecycle issues.
- Implement and support connected-appliance provisioning and claiming workflows, including device beaconing, QR-based onb oarding, Wi-Fi configuration, cloud claiming, Wi-Fi reset, and partner-cloud integration.
- Contribute to commercial laundry connectivity architecture, integrating AWS IoT Core and connected-device services to supp ort appliance provisioning, claiming, OTA, product information, network recovery, and factory-reset workflows.
- Develop and integrate software components using Kotlin/Java, Android frameworks, REST APIs, cloud services, and device c ommunication interfaces, with emphasis on reliability and maintainability.
- Perform software debugging and root-cause analysis using logs, traces, system states, debugging tools, and reproduction scenar ios; collaborate with cross-functional engineering teams to resolve product issues.
- Participate in code reviews, architecture discussions, technical investigations, integration testing, and release activities, followi ng Git-based development practices.
- Support product-level validation by reproducing field and system integration issues, analyzing failure sequences, and verifying fixes across multiple appliance operating scenarios.
- Develop an Agentic AI-based log analysis and root-cause analysis system using LLMs, RAG, LangGraph, vector databases, an d sequence analysis to automatically identify abnormal device behavior and correlate failures with known-good appliance exec ution sequences.
- Collaborate with global engineering teams and communicate technical findings, implementation status, risks, and root-cause an alysis to engineering and leadership stakeholders.

Einfochips Arrow Electronics **Jul 2024 - Dec 2024**
Senior Engineer *Centennial, CO*
Project : Open AI Based Apps

- Designed and delivered “ArrowGPT,” an enterprise Generative AI application on Azure OpenAI, exposing secure REST APIs via Azure API Management and deploying on Azure App Service / AKS with Microsoft Entra ID (AAD), Managed Identity, and Azure Key Vault, to ensure secure, scalable, and compliant AI access for enterprise users.
- Implemented end-to-end Retrieval-Augmented Generation (RAG) pipelines, including document ingestion, chunking, embedding generation using Azure OpenAI, and hybrid vector search with Azure AI Search, to provide accurate, citation-backed, and source-grounded AI responses.

- Integrated Large Language Models (LLMs) using Azure OpenAI Services and applied prompt engineering techniques, to generate context-aware, reliable answers based on retrieved enterprise documents
- Developed RESTful APIs using **ASP.Net Core** serving 20K daily users with average response time under 200ms, improving application performance by 35%.
- Implemented authentication system supporting **OAuth** 2.0 and **JWT** tokens for 20K active users.
- Designed reusable **AngularJS** UI components and services integrated with **REST** APIs, supporting scalable frontend architecture and long-term maintainability.

Einfochips (Creative EC) **May 2019 - Feb 2021**
Senior FullStack Engineer *India*
Project: Smart Water Meter

- Architected and implemented IoT data ingestion pipelines supporting ~1 million devices using Azure DPS, Azure IoT Hub, Stream Analytics, and Azure Functions, enabling real-time telemetry ingestion and processing from large-scale smart water meter deploym ents.
- **Architected C#/.NET microservices and REST APIs** for device provisioning and meter data access, integrating **Azure API Man agement to standardize security, traffic control, and monitoring across distributed services**.
- Executed 50+ performance and load tests on REST APIs and **SQL** stored procedures, improving API response times by 25% and in creasing overall system reliability.
- Developed **ETL**/ETP data pipelines using Azure **Databricks** and Apache **Spark**, aggregating telemetry data on hourly, daily, week ly, and monthly intervals to support reporting and analytics.
- Designed and optimized data storage architectures using Azure Cosmos DB, Azure SQL Database, and Azure Data Lake Storage G en2, supporting high-volume structured and unstructured meter data for analytics and billing platforms.
- Built a stream-processing architecture using **Kafka** for data buffering, partitioning, and high-throughput ingestion into Azure Data Lake Storage Gen2.
- Designed and implemented scalable **T-SQL** and **PL/SQL** stored procedures to support business reporting, data validation, and auto mated batch processing across multiple enterprise systems.
- Integrated monitoring and alerting solutions using Azure Monitor, Application Insights, and Log Analytics, enabling proactive dete ction of device connectivity issues and reducing operational downtime.
- Designed and implemented a **WPF (C#/.NET**) simulator to emulate device telemetry and test cloud ingestion pipelines, APIs, and processing services, reducing dependency on physical devices during development.
- Developed **unit tests for backend APIs, UI components, and services**, improving **code quality, test coverage, and release stability**
- Designed and developed interactive **Angular** dashboards to visualize real-time and historical IoT data, enabling operational monitoring and business insights.
- Integrated charting and visualization libraries (**Chart.js, ngx-charts**) to deliver dynamic, responsive data visualizations across dashboards.
- Built reusable **Angular** UI components (tables, filters, charts), ensuring UI consistency, scalability, and faster feature development across the application.

Einfochips **Mar 2018 - Apr 2019**
Senior Cloud/Backend Engineer *India*
Project: Snapbricks Gateway Framework

- Implemented Azure IoT stream processing solutions, integrating Wi-Fi and Bluetooth for device discovery, and device data processing.
- Built a responsive single-page application (SPA) using **Vue JS**, ensuring seamless interaction and optimal performance across devices.
- Developed the device management and firmware update modules using **Vue JS**
- Integrated **RESTful APIs** with VueJS services for real-time data binding and interactive UI updates.
- Designed and implemented scalable **stored procedures in T-SQL/PL-SQL** to support business reporting, data validation, and automated batch processing across multiple systems.
- Automated deployment of Azure backend services in a CI/CD pipeline increases release frequency, with improved code quality.
- Developed **unit test cases** for Vue components, services, and pipes using **Jasmine** and **Karma** to ensure code reliability.
- Achieved **high code coverage** by writing test cases for all business logic and UI interactions.

Einfochips(Cisco) **Mar 2015 - Feb 2018**
Senior Application Engineer *India*
Project: Video Management System

- Developed a Windows-based ActiveX control (C# .Net) for RTSP streaming (video/audio) using H.264/MJPEG codecs, and integrated joystick controls for PTZ cameras.

•Built a cross-browser streaming video player with WebSocket and JavaScript, integrating FFmpeg to enhance the RTSP client library for seamless video streaming.
•Designed a camera discovery tool using the Bonjour open-source library and developed a wrapper library for H.264/MJPEG to MP4 conversion.
•Developed Camera UI using JavaScript and HTML5. Implemented customize UI components using jQuery.
•Conducted vulnerability and security testing for the web UI and camera API, debugging video/audio packets using Wireshark to ensure optimal performance.
•Developed WPF (C#) based Camera Discovery Tool and Camera Management Application.

Einfochips (Robert Bosch) **Sep 2012 - Jan 2015**
Senior Application Engineer *India*
Project: Secure Building Pannels

- Monitored server application performance, identified bottlenecks, and implemented optimizations to enhance availability and responsiveness.
- Developed a multi-threaded server application in C# .net for continuous 24/7 operation.
- Develop and maintain CI/CD pipelines using Azure DevOps and GitHub Actions to automate deployment processes.
- Designed and implemented APIs to facilitate seamless client-server communication.
- Developed WPF (C#) based Windows App for Device Management.
- Authored unit test cases achieving over 90% code coverage.

Education

Gujarat University
Bachelor of Engineering, Computer Engineering

Certification

•Azure AI Fundamentals (AI-900)