

RAVI ANIL KUMAR

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Technical Skills | Backend Engineer with versatile knowledge and Leadership

Languages: C#, Python, Java, C/C++, SQL

Web Frameworks: .NET Core, Spring, Flask, FastAPI

Cloud Technologies: AWS (S3, ECS, IAM, Lambda, Kinesis), Azure DevOps

DevOps Tools: CI/CD, Docker, Kubernetes, Jenkins, Git, Maven, CloudFormation, Terraform

Database Technologies: PostgreSQL, ClickHouse, Neo4j, Redis, Elasticsearch, MongoDB, Milvus

Distributed Systems: Kafka, gRPC, NATS, Akka.NET, Microservices, REST API, GraphQL

Observability: Prometheus, Grafana, OpenTelemetry, Loki, StatsD

AI/ML & LLM: LangChain, Haystack, RAG, AI Agents, Hugging Face, Vector Databases, Numpy, Pandas, Scikit-learn, NLTK, Text Processing, Gen AI Workflows, Prompt Engineering

Other: Linux, Shell Script, Agile/Scrum Methodologies, Jira,

M.S Electrical Engineering, Virginia Tech, Blacksburg, VA AWS Certified Solutions Architect

Work History

Lead Software Engineer: Quantum Control Solutions|Dec 2023 – Current
Keysight Technologies, Inc (an HP Company) | Remote, VA

- Implemented **Microservices** architecture for **real-time data plotting** using gRPC communication, C# data aggregator and **Kafka producer/NATS producer** for reliable message delivery
- Led **PostgreSQL** database design, optimization, and troubleshooting for enterprise-scale data analytics
- Developed a custom **Postgres** partitioning service to manage large-scale telemetry data without relying on pg_partman for windows deployments
- Enhanced system **observability** with OpenTelemetry/Prometheus/Grafana for metrics, Jaeger for tracing, and Loki/PromTail for logs, improving issue diagnosis and resolution
- Implemented Consul-based distributed configuration system with C# agents on each host for centralized config management and CLI-controlled service configuration updates
- Architected real-time averaging feature for large acquired data arrays with user-configurable averaging windows and support for various measurement configurations

Lead Software Architect: Network Visibility Solutions|Nov 2022 – Dec 2023
Keysight Technologies, Inc (an HP Company) | Remote, VA

- Architected and implemented a real-time backup and restore system for in-memory storage, improving RPO and RTO from 3 days to 10 minutes low Latency, high throughput (Java, C++, Kafka, Redis, and Grafana, Prometheus, Kubernetes)
- Led a team of 3 members and brought the system from design, PoC and then to product feature

Senior R&D Engineer - Data Analytics Platform | Feb 2017 - Nov 2022
Keysight Technologies, Inc (an HP Company) | Chantilly, VA

- Led Development of a **Data Analytics** Solution from ground-up processing 100GB/hour of binary wireless data using Akka.Net **distributed framework** along with analytics for wireless operators
- Designed **scalable ETL pipelines** with UI-driven configuration for high-volume data ingestion, transformation, and analytics processing across distributed microservices architecture
- **Optimized database performance** and query execution for large-scale analytics operations, improving data retrieval speeds and system throughput
- Implemented comprehensive observability stack using StatsD, Carbon, Graphite, and Grafana for real-time monitoring, alerting, and performance optimization of data processing workflows
- **Led cloud-native containerization initiative**, deploying applications on **Kubernetes** in Windows environments with automated scaling and resource optimization
- Developed AWS-native real-time processing solution leveraging Kinesis for data streaming, Flink for complex event processing, and Lambda for serverless compute optimization

Sr. Software Engineer | Apr 2015 - Jan 2017
Anite | Chantilly, VA

- Developed data analysis algorithms using C++ and C# for network solutions
- Designed IP trace analysis tools leveraging TCP/IP and **networking** principles
- Implemented CI/CD and DevOps practices, reducing bugs in release candidates by 50%
- Created testing and integration tools to improve software reliability

Software Engineer | Apr 2008 - Apr 2015
Xceed Technologies | Reston, VA

- **Refactored legacy monolithic codebase** into a modern microservices architecture, enhancing system reliability by 50% through decoupling components and implementing an efficient job queuing mechanism.
- Optimized service-level code and database interactions, resulting in a 20% improvement in overall application performance by reducing latency and increasing throughput
- Designed and developed advanced log analysis tools using Apache NiFi, enabling real-time error detection and proactive debugging, which significantly improved system observability and reduced troubleshooting time.

Systems Engineer | Jan 2004 - Apr 2008
CNS, Inc | Springfield, VA

- Developed distributed simulation software using C++ and Java for analyzing network capacity and traffic load
- Implemented software solutions for IPv4-IPv6 transition scenarios, focusing on mobility and VoIP use cases
- Contributed to technical proposals for large-scale networking projects, including GMPLS and trust evaluation in distributed sensor networks
- Presented technical findings and reports to NASA-AMES and NASA-GRC

Personal Project - Document Review & Data Analytics Automation

deephouse.io - SaaS eDiscovery Platform | Jan 2023 – Current

- Architected and co-developed SaaS platform from concept to MVP for legal document review and End-to-End Data Analytics market
- Built cloud-native microservices architecture with REST APIs using .NET Core, Java, Python
- Integrated comprehensive AWS stack: ECS containers, Lambda functions, RDS databases, Elasticsearch search
- Implemented AI/ML capabilities: LLM-powered Q&A, document classification, summarization, and NER detection
- Designed automated workflows evaluating Airflow and DigDag for SQL/Python task orchestration
- Established full DevOps pipeline with AWS CodePipeline and Azure DevOps for CI/CD automation
- Built production monitoring: CloudWatch alerts, StatsD metrics, Prometheus/Grafana dashboards