Aakash Madabhushi

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Summary

Ship services and the tooling around them: a 17-container platform coordinated over Kafka, production pipelines serving 75+ tenant dashboards at 5M+ rows a day, and a 43% cut in p95 query latency. Comfortable across the stack and below it, from React and SwiftUI clients down to the servo-bus firmware defect that was bricking a robot arm between power cycles.

Experience

Graduate Research Assistant Mar. 2026 – Present
SJSU Applied Data Science Lab *San Jose, CA*

- Let operators run a 100-trial evaluation protocol unattended by building a resumable harness with automatic return-to-start, stale-cache guards, crash recovery, and per-trial structured logging.
- Restored a robot arm that was unusable across power cycles by tracing the fault through perception, policy, and control to an STS3215 EEPROM re-lock defect silently reverting motor IDs, then patching the firmware write path.
- Made training runs reproducible across machines by containerizing the PyTorch/CUDA pipeline with pinned dependencies, 5K-step checkpointing, and resume support over 60K-step runs.

Software Engineer Jun. 2023 – Jun. 2024
Sapaad *Dubai, UAE*

- Cut p95 dashboard query latency **43%** (12.4 s to 7.1 s) across 10+ Spark jobs serving **75+ tenant dashboards** by profiling execution plans, rewriting SQL window functions, and placing targeted caches.
- Shipped production Python services and ETL/ELT pipelines processing **5M+ rows per day** on a multi-tenant SaaS platform, extracting the features behind its recommendation models.
- Caught 14 schema, freshness, and ingestion anomalies automatically by building a Delta Lake data-quality framework with schema validation and freshness checks across every ingestion pipeline.

Computer Vision Engineer Intern Sep. 2022 – Dec. 2022
Toothlens *Remote, India*

- Carried an orthodontic preview prototype from architecture comparison to a working end-to-end service, documenting the tradeoffs so the choice could be revisited as more data arrived.
- Increased usable image inputs **20%** across 1,500+ real-world photos by implementing OpenCV preprocessing guardrails that screened and corrected degraded captures before they entered the pipeline.

Projects

Distributed Hiring Platform with Agent Workflow | *FastAPI, Kafka, Redis, LangGraph, React, Docker* Spring 2026

- Shipped a **17-container** platform across 5 service groups, keeping resume parsing and embedding matching off the synchronous request path by routing them through Kafka topics with shared trace IDs.
- Cut repeat profile-lookup latency **6x** under 100 concurrent threads with cache-aside Redis reads and write invalidation.
- Selected a deployment topology on evidence by benchmarking single-instance against multi-replica deployment at 500 concurrent threads, quantifying the response-time and throughput tradeoff before committing.

Reader: Attention-Management Browser Extension | *TypeScript, React, Vite, Chrome MV3, SwiftUI* Jul. 2026 – Present

- Kept user browsing data on-device with **zero external API calls** by running Gemini Nano locally inside a Chrome MV3 extension instead of routing page content to a server.
- Shipped a companion SwiftUI iOS app sharing focus-session state through Cloud Firestore, so a session started in the browser continues on the phone.
- Built the extension on Manifest V3 service workers with a React and Vite dashboard surfacing per-site activity and session history.

Containerized ROS 2 Robotics Runtime | *Docker Compose, ROS 2 Jazzy, Gazebo Harmonic, RViz* Mar. 2026

- Reduced environment setup to **1 command** on macOS and Linux by packaging ROS 2 Jazzy, Gazebo Harmonic, RViz, and a TurtleBot3 model into a reproducible Docker Compose stack.
- Eliminated X11 forwarding failures on GUI tooling by embedding a browser-accessible desktop in the container, so contributors run identical tooling without host-specific configuration.
- Pinned OS, distribution, and simulator versions in the image so results transfer unchanged between developer laptops and lab workstations.

Containerized Prediction Service with CI/CD | *FastAPI, Docker, GitHub Actions, AWS EC2* Apr. 2025

- Redeployed a containerized prediction service to AWS EC2 automatically on every commit by wiring a GitHub Actions pipeline that builds and ships the image with no manual steps.
- Wrapped a scikit-learn model behind a FastAPI service with request validation, so malformed calls return errors instead of malformed predictions.
- Pinned the runtime in Docker so the environment the model was built in and the environment it serves from cannot drift apart.

Technical Skills

Languages: Python, TypeScript, JavaScript, SQL, Swift (SwiftUI), Bash
Backend & Distributed Systems: FastAPI, Apache Kafka, event-driven architecture, REST APIs, microservices, caching and cache invalidation, load benchmarking, asynchronous processing, trace-ID correlation across services
Data Stores: SQL, MySQL, MongoDB, Redis, Snowflake, Cloud Firestore, Delta Lake
Frontend: React, Vite, Chrome Extensions (Manifest V3), SwiftUI
Infrastructure & Delivery: Docker, Docker Compose, GitHub Actions, CI/CD, AWS EC2, Git, Linux, reproducible builds

Education

San Jose State University — Expected Dec. 2026
M.S. in Applied Data Science — *San Jose, CA*

Illinois Institute of Technology — May 2023
B.S. in Artificial Intelligence — *Chicago, IL*