Ambrose Tuscano

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TECHNICAL SKILLS

- **Core Expertise:** Distributed systems design, high-throughput data pipelines, serverless architecture, API development and modeling, ML/AI integration, infrastructure and performance optimization, real-time event-driven systems, and observability and monitoring.
- **Languages:** Java, Python, SQL, TypeScript.
- **Tools:** Asana, Docker, Git, Grafana, Postman.
- **Databases & Storage:** Apache Iceberg, DynamoDB, Memcached, MongoDB, MySQL, PostgreSQL, RDS, Redshift, Redis, S3.
- **Frameworks & Libraries:** Dagger, Django, FastAPI, Flask, Guice, GraphQL, ReactJS, Spring Boot, TensorFlow, Vert.x.
- **AWS Services:** API Gateway, Athena, Bedrock, CloudFormation, CloudWatch, EC2, ECS, ElastiCache, Fargate, Glue, Kinesis Firehose, Lambda, QuickSight, SageMaker, SNS, SQS, Step Functions.

PROFESSIONAL EXPERIENCE

Software Engineer @ Amazon [Advertising] **Arlington, VA | May 2022 - Present**

- Designed and built a scalable Ad Labeling Service to process and store rule and AI-driven labels, increasing throughput by 5× over the legacy system and enabling extensible support for sync and async labeling services to meet post-bid filtering needs for publishers.
- Engineered a serverless data lake using DynamoDB PITR exports to Apache Iceberg tables, cataloged in AWS Glue and queryable via Athena, achieving 30-minute data freshness SLA for analytics workloads.
- Built Step Functions workflows for real-time ad evaluation (5K+ TPS, sub-second latency), enforcing pre-bid filtering rules that validate ad labels against publisher requirements for compliance and yield optimization.
- Contributed to coding and infrastructure development for Ad Registration Service APIs, data models, and GraphQL layers, alongside a scalable ElastiCache-based ingestion system. Achieved low-latency APIs (<15 ms) supporting 1,000+ TPS, enabling efficient access to advertiser and creative metadata and addressing key publisher concerns in ad bidding.
- Supported the launch, end-to-end testing, and Weblab based A|B test experimentation of the Ad Relevance API and Infrastructure for Amazon Retail, achieving over 1 million (TPS) and a projected year-over-year $10 million increase in ad revenue for Amazon DSP.
- Wrote a root cause analysis, and resolved a 10% request drop issue by optimizing infrastructure scaling policies, also enhanced alarming and monitoring, and implemented CI/CD best practices to help test and catch issues earlier.
- Optimized the BrandSafety data pipeline throughput by 3x (from 17 million to 52 million products processed per day). This improvement drastically reduced a critical backfill process from 45 days to under 14 days.
- Orchestrated the successful transition of a complex service with six interdependent subsystems to a new team, leading comprehensive documentation, knowledge transfer sessions, and post-handoff support while maintaining 100% service uptime.
- Led initiatives to enhance the team's operational excellence by developing comprehensive documentation, runbooks, monitoring systems, and custom Python scripts to debug and automate backfill processes, improving incident response and process reliability.
- Built AI-powered knowledge bases with Bedrock, Kendra, and S3, deploying wikis and a Slack bot that automated technical support, reduced manual queries, and accelerated customer onboarding.

Software Engineering Intern @ NXP Semiconductors **San Jose, CA | May 2021 - Aug 2021**

- Revamped the test suite using Python and Keras, incorporating advanced Machine Learning techniques in NLP and Unsupervised learning. Achieved a 30% reduction in runtime and decreased manual intervention by 60%.
- Collaborated with multiple teams to assess software testing needs, identified opportunities for ML integration. Explored SaaS solutions and authored comprehensive documentation to support seamless adoption within the team.

EDUCATION

Master of Science (M.S.) in Computer Science | University of Maryland, Baltimore County **Jan 2020 - Dec 2021**

Bachelor of Engineering(B.E.) in Computer Science | University of Mumbai **May 2015 - May 2019**

KEY PROJECTS

Diabetes Detection Service: **[FastAPI, React, Twilio, PostgreSQL, Docker, AWS, Postman]**

- Built a full-stack diabetes prediction app using a Random Forest model with Google Maps and Twilio for real-time location and alerts.
- Dockerized and deployed on AWS EC2 with PostgreSQL, ensuring reliability through Postman testing.

Sports Fantasy Application: **[Android Studio, Java, Python Flask, PostgreSQL]**

- Developed an Android app in Java for sports info and a Football Fantasy tournament.
- Built a Python web scraper to populate PostgreSQL with live game data and a Flask-based REST API to connect the database with the app, enabling real-time updates and interactive Fantasy scoring functionality.

Peer to Peer Distributed File System: **[Sockets, Multi-threading, Python]**

- Architected a Distributed System using TCP protocol, enabling seamless File CRUD operations across multiple P2P connected nodes.
- Implemented a robust failure resilient architecture by incorporating replication strategy and employing version control techniques.