

# Ambrose Tuscano

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## SKILLS

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- **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.
- **Core Expertise:** Large-scale backend systems, low-latency APIs, high-throughput services, data pipelines, cloud-native architecture, MLOps integration, performance optimization.

## PROFESSIONAL EXPERIENCE

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### Software Engineer @ Amazon [Advertising]

Arlington, VA | May 2022 - Present

- Designed and built a scalable Ad Labeling Service system using Lambda and Bedrock to process ad updates and store rule- and AI-driven labels. Developed a Glue- and Iceberg-based data lake with a 30-min freshness SLA and orchestrated a Step Functions based evaluation flow enforcing publisher rules for pre- and post-bid filtering, handling 5K+ TPS.
- Contributed to the development of Ad Registration Service APIs, data models, GraphQL layer, and scalable infrastructure including a high-throughput Amazon ElastiCache ingestion system for Ad data. The registration APIs achieve low-latency performance (under 15 ms) while the service overall handles over 1,000 TPS and provides extensible access to advertiser and creative metadata, making ad registration easier for DSPs and addressing key publisher concerns around pre-bid filtering and data availability during ad evaluation.
- Supported the launch, end-to-end testing, and Weblab based A/B test experimentation of the Ad Relevance API and Infrastructure for Amazon SSP, achieving over 1 million transactions per second (TPS) and a projected year-over-year (YOY) \$10 million increase in ad revenue. 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 to help test and catch issues earlier.
- Engineered a significant scaling optimization for the BrandSafety data pipeline, increasing throughput by 3x (from 17 million to 52 million ASINs processed per day). This improvement drastically reduced a critical backfill process from 45 days to under 14 days.
- Orchestrated the seamless transition of a complex service comprising six distinct subsystems to another team. Led efforts in comprehensive service documentation, knowledge transfer sessions, and ongoing support, and maintaining 100% service uptime.
- Led initiatives to develop comprehensive documentation, monitoring systems, and custom Python scripts for backfill debugging. Resolved 400+ support tickets across high-stakes campaigns and built internal and customer-facing self-updating knowledge wikis using Bedrock, Kendra, and S3 to improve team information accessibility and simplify customer onboarding.
- Contributed to the code and infrastructure development for an AI based Ad Similarity and Labeling system which won Ads organization-wide hackathon, and transitioned the project into production using AWS based infrastructure.

### Software Engineering Intern @ NXP Semiconductors

San Jose, CA | May 2021 - Aug 2021

- **Test Suite Revamp & Optimization:** 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%.
- **Cross-Team Collaboration:** 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 AND HONORS

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University of Maryland, Baltimore County | Master's of Science in Computer Science

Jan 2020 - Dec 2021

University of Mumbai | Bachelor of Engineering in Computer Science

May 2015 - May 2019

## KEY PROJECTS

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### Diabetes Detection Service:

[ FastAPI, Twilio, PostgreSQL, Docker, AWS, Postman ]

- Built a FastAPI-based REST application for Random Forest-based diabetes prediction with Google Maps and Twilio integrations.
- 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.

### Product Validation Service:

[ Django, ReactJS, SQLite, Heroku ]

- Designed and implemented a QR code generation platform (Django, ReactJS, SQLite, Heroku) for efficient item detail sharing.
- Developed a robust API (hosted on Heroku) to manage validations, seamlessly integrating with ReactJS for an end-to-end solution.