Andrew Loutfi

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EXPERIENCE

Senior Software Engineer - Torqata/American Tire Distributors *February 2022 - Present, Charlotte, NC*
- Architected and implemented Python-based Kubernetes microservices to create event-driven and large-scale business-critical ETL pipelines
- Developed plug-and-play data lineage/provenance system, enabling comprehensive visibility over elastic task-based data processing systems
- Conceptualized and spearheaded highly available Big Data as a Service API and message-streaming product
- Engineered and implemented bespoke Shop Management System integrations between Torqata and 8,000 tire shops
- Conceptualized, evangelized, and executed org-wide OKR for software ecosystem maintainability that resulted in a reduction of churn and friction by 48%
- Managed engineers and product leads of all skill levels, provided mentorship in implementation, XP, SDLC, and agile paradigms

Software Engineer - OneOme *February 2020 - February 2022, Minneapolis, MN*
- Collaborated with Data Science, Clinical Development, and Insurance Arbitration teams to build a PGx stratification system to run on policyholder datasets
- Created full-stack HIPAA-compliant web applications to deliver valuable genetic drug interaction information to patients and providers
- Overhauled medical report generation system to ensure rapid delivery of new genetic data from the clinical team while reducing system cost by 30%
- Acted in an SRE capacity to ensure 99.9 % uptime for Electronic Health Record integrations, responsible for 72% of the company's total order volume
- Established a completely new development team from hiring to onboarding, including a tech lead and 4 new engineers

Software Engineer - Minnesota Traffic Observatory *March 2016 - February 2020, Minneapolis, MN*
- Conceptualized and built a novel Smart Work Zone management system used by Minnesota, Washington, and South Dakota DOTs
- Administered over on-premise server blades and a fleet of 50 road-side data collection stations, ensured 100% uptime during Minnesota Winters
- Collaborated with Transportation Researchers to build algorithmic tools and methodologies to handle data collection and analysis at large scale
- Managed a team of transportation study participants to build and curate terabyte-sized datasets used in 14 different MnDOT studies

SKILLS

Languages: Python, Git, Terraform, SQL, Bash
Platforms/Frameworks: Kubernetes, Docker, GitHub Actions, Grafana, Prometheus, PostgreSQL, MongoDB, Apache Kafka, Apache Airflow, Heroku, Auth0
Python Frameworks: Pytest, Pandas, FastAPI, Flask, Django
Amazon Web Services: EC2, ECS, EKS, RDS, Kinesis, CloudFormation, Lambda, CodeArtifact, S3
Google Cloud Platform: GKE, PubSub, Cloud Functions, Cloud Run, App Engine, Cloud Storage,
Paradigms: SRE, DevOps, Unit Testing, Integrations Testing, Test Driven Development, Large Language Models

PROJECTS

Cloud-Based Platform and Infrastructure Initiatives
- Torqata: Created process and implementation of core Docker Image to aid in zero-touch security vulnerability resolutions
- Torqata: Conducted Kubernetes horizontal auto-scaling profiling and optimization across multiple teams
- OneOme: Migrated Repository, Continuous Integration, and Continuous Deployment functionality from Bitbucket to GitHub
- OneOme: Migrated Infrastructure-as-code implementation from CloudFormation to Terraform

Shop Management System (SMS) ETL Pipeline - Torqata
- Improved resilience and scalability of a Kubernetes ETL pipeline, enabling it to process 17 TB of SMS data in under 5 hours and new data in real-time.
- Re-architected and engineered overhaul of pipeline components, including conversion of API call-based handoffs to using a robust message queue
- Enabled team to maintain 99.08% up-time, ensuring a reliable flow of data to all downstream services
- Oversaw and assisted with upgrade of 12 api based microservices from Flask to FastAPI, resulting in a 30% decrease of needed pod replicas under max load

Shop Management System (SMS) Integrations - Torqata
- Implemented a highly extensible and scalable system to pull data from a multitude of integration partners
- Collaborated with integration partners to help them understand how our system uses their data and how it is securely stored
- Re-architected and overhauled a new version of the system so that it can handle data pulls from many integration partners in parallel with fault tolerance

Shop Management System (SMS) data lineage/provenance service - Torqata
- Aggregates and disseminates actionable monitoring information about daily SMS file drops and their status to internal Torqata teams
- Assisted with rapid adoption of service data with Analytics and Customer Support Teams
- Resulted in automation of data health and loss triaging processes, decreasing time to resolution by a factor of 5

Data as a Service (DaaS) API and Streaming service - Torqata
- Created REST API Gateway to enable external businesses to pull data from Torqata's systems securely, currently handles ~400 concurrent requests/min
- Architected and implemented a streaming router to publish data to Kafka, GCP PubSub, Azure EventHub, or AWS Kinesis at a petabyte-scale
- Created a process around rapidly exposing and serving new data to adapt to what the external business wants from Torqata

Pharmacogenomic (PGx) Patient Stratification System ETL Pipeline - OneOme
- Enabled organization to identify patient populations that would benefit from OneOme's PGx test offerings
- Authored Comprehensive Software Requirements Specification Document for the system while collaborating with the Data Science Team
- Rebuilt R-based prototype in Python, resulting in a 238% speed increase for the system to run over policyholder datasets of over a million records

State-Wide Work Zone Information System (SWIS) - Minnesota Traffic Observatory
- Conceptualized algorithm and implementation of a prototype system to track and monitor roadwork assets
- Enables automated traffic control inspection compliance to aid in determining traffic control inspection compliance
- Developed Python Library to run efficiently on a variety of battery-powered IoT devices
- Facilitated project funding from a variety of state-level, academic, and private sources

EDUCATION

Master's of Science: Software Engineering - University of Minnesota • Minneapolis, MN • 2019-2021
Bachelor of Arts: Computer Science - Luther College • Decorah, IA • 2015-2017