

Colin Curtis - Software, Data, and Machine Learning

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PROFESSIONAL SUMMARY

Software engineering is a complex and fast-moving profession where team-work and clear communication is as important as technical skill. Delivering great customer experience and value is the goal. In order to consistently reach that goal, cleanly architected systems with a focus on cost-effective practices are the vehicle.

EDUCATION

2012 - 2014 M.S. (Physics) at **North Carolina State University**

2007 - 2012 B.S. (Physics w/ Math Minor) at **Appalachian State University**

SKILLS AND INTERESTS

- Professional
 - C4 software system design
 - SOLID coding principles
 - ICE product/feature design
 - Linear Algebra, Calculus, Statistics, Error Analysis
- Personal
 - Gardening, Cooking, Sci-fi
 - Mountain Biking, Skiing, Running, Soccer

WORK EXPERIENCE

Machine Learning Ops and Software Engineer - Fidelity Investments April 2023 - Present

- Data Science Platform and MLOps Chapter, AI/ML Solutions Engineering Squad
- Systems and Tech:
 - python 3, docker, kubernetes, cloudformation
 - AWS: Sagemaker, Cloudwatch, ECR, S3, RDS, EKS, IAM, Cost Explorer
 - other platforms/tools: Splunk, Argo, Jenkins, Snowflake, Azure AD, jupyter NB
 - unittest and mock for testing
- Projects and Responsibilities:
 - Spearheaded ML-training/inference cost-savings initiative, five-figure monthly savings outcome
 - Created first version of a SSO authentication flask app to wrap data science web apps, abstracting security concerns away from our customers
 - Contributed to model-endpoint testing including LLM token-usage and response-time metrics
 - Code and deployment support for engineers and data scientists across squads/chapters
 - Extensive code review, bringing Python3 and OOP best-practices to bear for my own squad as well as sibling-squads
 - Handled database migrations, surgery and any other troubleshooting/fixing that needs doing
 - Conceptualized and added new pieces of work to the JIRA ticket queue
 - Helped present our squad's products to potential customers and leadership from other squads
 - Onboarded LLM-Gateway to Fidelity's Enterprise-wide API platform, including careful documentation for team-internal and customer usage

Senior Software Engineer - Garner Health

August 2022 - February 2023

- Systems and Tech:
 - Python 3: connexion/flask, psycpg2, sqlalchemy, boto3, pytest, alembic, asyncio, behave
 - AWS: S3, VPC, IAM, RDS, ECR, EKR, Step Functions, Lambda, Transfer Family, Secrets Manager
 - Docker, Kubernetes, Terraform
- Projects and Responsibilities:
 - PGP decryption module for the file ingestion system
 - Designed and implemented Client Data Configuration Versioning
 - System testing of RESTful APIs using Behavior Driven Design (behave library)
 - Product Requirement Documents for engineering/management communications

Software Engineer - Actalent Services

April 2019 - July 2022

- Systems and Tech:
 - Microservices architecture for Bridgestone's tire-design CAD web application
 - Python 3, react.js, numpy, logging, pytest, mongoDB
- Projects and Responsibilities:
 - Designed and built a Dynamometer Dashboard for engine test data analysis at Ford Motors
 - Contributed to Bridgestone tire design CAD/analysis system written in Python 3 and React.js
 - Added 'overlays' to the CAD system, allowing tire engineers to view a transparency of one tire design overlaid on to another
 - Refactored the automatic Excel report generation - tire engineers click a button in the CAD system and the Python back-end generates a downloadable report
 - Converted and upgraded FMAT, a tire image analysis tool, from MATLAB to Python 3 and introduced 'alpha-shapes' computational geometry technique to improve the boundary estimates of complex 2-D shapes

Junior Software Engineer - Renaissance Computing Institute

June 2018 - March 2019

- NIH National Center for Advancing Translational Sciences (NCATS) - Biomedical Data Translator
- Wrote and deployed APIs using Marathon, Mezos, Github, Jenkins, Docker, nginx, and python3

Research Assistant, NCSU Physics

May 2013 - April 2018

- Designed and coded ALAI, a MATLAB application for automating fractal analysis of nanoscopic images
 - Reduced the user's active analysis time, per image, by a factor of ~50
- ANSYS Maxwell mesh-calculation to simulate 3-D electro-magnetic fields
- LabVIEW software systems for instrument control and data collection

PUBLICATIONS

- First Author, *A Comparative Study of the Nanoscale and Macroscale Attributes... of Nanodiamonds*, Beilstein Journal of Nanotechnology, Sep 2017 (PDF available here: <https://www.beilstein-journals.org/bjnano/content/pdf/2190-4286-8-205.pdf>)
- Second Author, *Unconfined, melt edge electrospinning from multiple, spontaneous, self-organized polymer jets*, Materials Research Express, 28 Nov 2014 (Vol. 1, Num. 4)
- Third Author, *A Tribological Study of γ -Fe₂O₃ Nanoparticles in Aqueous Suspension*, Tribology Letters, Dec 2018 (66:130)