Akash Singh

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Education

McGill University, MS. Computer Science
Graduated in May 2019
Montreal, QC. Canada.

Technical Skills

Python, Java, Typescript, AWS,
Service developer, Model Pipelines, CI/CD setup
Node.js, Express.Js, Next.js, Django, Tornado, Spring boot

Service, Rule Engine, Worker creation,
Database (structured, unstructured),
Cloud orchestration, npm, Poetry, Conda,

Experience

Software Engineer II, Amazon (AWS)/Amazon Alexa Bengaluru, KA **April 2022-till date**
Java, Python, Typescript, ExpressJS, Node.js, Next.js, AWS cloud stack

Tools & Tech: Typescript based frameworks: Express.js, Node.js, Next.js, Python, Java, AWS
Role:
-> Config driven autonomous agentic system for launching Fee type to a new marketplace. Launching a fee to a new marketplace used to take 26 weeks of SDE effort, with autonomous agents, this was reduced to ~1 week.
-> Inventor in Patent in review for Alexa+ conversational bug reporting or feedback mechanism: Feedback Expert.
-> Retrieval-augmented generation (RAG) system for Alexa Feedback processing to support 1850 TPS traffic.
-> Design and develop frontend or backend services at AWS re:Post. Worked on Search Engine Optimization (SEO) and A11Y which resulted in performance improvement of 86% of our page hits based on Google Analytics.
-> Integrated Content Curation model to moderate content in re:Post.
-> Multi-language feature is developed by me in https://repost.aws/ increasing the customer usage by 4 folds.

Senior Software Engineer II, Sophos MTR. Montreal, QC [remote] **June 2021-April 2022**
Python, Gunicorn, Golang, Terraform, Bash, Kafka, Kinesis, SNS, SQS, Consumer/Producer, Parquet

Tools & Tech: Spring boot, Maven, ELK stack for monitoring, kafka consumer creation, kubernetes, Jenkins, Pytest, pip, AWS
Role: Own component development end-to-end, Telemetry setup and monitoring, Performance enhancements
-> Design and develop consumers/producers to store streaming endpoint/firewall data to data lake.
-> Setup telemetry and alerts for monitoring and performance analysis.
-> Reduced the #EC2 instances required by 8 times [ex. 128 to 16 in us-west-2] by migrating consumers from Python to Golang.
-> Deep learning model for threat detection in packets captured via pf_ring by converting them into spiral images to lower the proximity between the neighboring pixels.

AI Developer II, Intact. Toronto, ON **Aug 2020-June 2021**
Python, Rule Engine, Consumer, Drools, Java, MongoDB, Confluent Kafka

Tools & Tech: Spring boot, Maven, ELK stack for monitoring, kafka consumer creation, kubernetes, Git CI, Pytest, pip, AWS
Role: Design-Implement-Test features, PoC for new integrations, Optimize processes
-> Architecture & Design, Build, Implement and Test claims document classification consumer component.
-> ML Model for insurance claim classification using an ensemble of NLP and image based deep learning model.
-> Developed A/B testing model pipeline for different model deployments based on language and region.
-> Optimized machine learning model deployment pipeline to enable push button model update.
-> Setup Logging pipeline to separate user logs with application logs for D&A team to create dashboards.
-> Conduct Stakeholder demos and internal training and coaching of the data science team for code quality.

Research Software Developer, Via Science. Montreal, QC **Jan 2019-June 2020**
Python, Postgresql, SQLAlchemy

Tools & Tech: Django, Tornado, Pytest, Asyncio, Git, AWS, Conda, Redis, Codeship, Docker, RabbitMQ, Celery, ipdb
Role: Design-Implement-Test features, PoC for new integrations, Optimize processes
-> Designed and developed RESTful web services and Stateless servers following “The 12 Factor App methodology”.
-> Developed scoring algorithm as labels for transformers and used it to create multiclass ML model to be integrated into the product.
-> Enabled User Acceptance Testing by revising the the conda package to enable product usage.
-> Design and develop pipeline for integrating machine learning models in the product for customer usage.
-> Wrote scripts for automated integration tests and Behaviour Driven Development tests.

Experience

Research Assistant, McGill University. Montreal, QC **Jan 2017-Aug 2018**
Python, Angular, Nodejs, Postgresql

Tools & Tech: Phylo, OpenPhylo, Citizen Science, AWS, Docker, RabbitMQ, Pycharm, VS code
-> Proposed a new framework for game Phylo after analysis of the data collected by it since 2010. Work In Progress paper published in HCOMP.
-> Enhanced the difficulty prediction of puzzles by ~12% using Neural Networks. Paper published in AAAI.
-> End-to-end development of OpenPhylo reducing the manual effort of extracting Phylo puzzles to 0.
-> Integrated Teaching Portal to OpenPhylo increasing players count by 15%.
-> Phylo is also deployed in Science and Technology Museum, Ottawa.

Programmer Analyst, Cognizant. Chennai, IN **June 2014-Jun 2016**
Java, J2EE, Hibernate, MySQL

Tools & Tech: Java, Hibernate, Junit, MySQL, Insurance, Git
Role: Design-Implement-Test features
-> Architectured, designed and implemented extraction of variables from Calligo scripts to increase productivity by ~13%. Was the Digital Superstar for 2 quarters.
-> Automated the process of maintaining bugs related to similar issues and assigning them to the same person.
-> Made way for the adoption of xDashboard stack by client via a successful PoC.

Teaching Assistant, McGill University. Montreal, QC **Sep 2017-Dec 2018**
Java, UMLet, MEAN stack

Tools & Tech: *Software Design, Web Development*, MEAN stack, UMLet, Debugging, The-12-Factor-App
-> Answered course related questions from students on the course discussion bord.
-> Designed an assignment *(with solution)* that requires students to do Test Driven Development (TDD).
-> Provided comprehensive tutorials on 12-Factor-App.

Management Intern, Sahara Q-shop. Mumbai, IN **June 2016-Jul 2016**
ABAP, ABAP-SQL

Projects & Publications

A storified citizen science computer game to teach and contribute to genomic data analysis(Co-author), Genomics **July 2022**

Elasticsearch Fake Data Creator, Public Contribution **Python** | Github link **COVID 2020**
Output: Conda package to create fake data for load testing or stress testing. This was created to resolve issues with elasticsearch upon variable load and shards during the development phase.

Phisher-Man (capture phishing emails), Public Contribution **Python** | Github link **COVID 2020**

Lessons from an Online Massive Genomics Computer Game(First-author), AAAI **Python** **Sep 2017**
Output: Identify patterns that contributes to success and pitfalls in a Citizen Science product.
Role: Identify features that allow predicting task difficulty, which is essential for channeling them to human players with the appropriate skill level. Show how Phylo has been used to quickly improve a reference alignment of Ebola virus sequences.

A HCI platform for multi-scale genome analysis (First-author), HCOMP **Python, Nodejs** **Aug 2017**
Output: A citizen science framework for a collective curation genomic annotation at multiple levels of ancestry.
Role: Currently our system aims to integrate a fully new version of Phylo solving the Multiple Sequence Alignment (MSA) problem, with a new game aiming to understand the evolution of large scale genomic regions.

Chaos Based Cryptosystem for Images (First-author), IJEDR **MATLAB** **Fall 2013**

Debit card security based on chaos function and QR code (First-author), IEEE **Java** **Winter 2014**

ICLR Reproducibility Challenge, Public Contribution **Python** | https://tinyurl.com/iclr-rep **Winter 2018**
Output: Identify which parts of the contribution in the chosen paper - Convolving DNA using two-dimensional hilbert curve representations -- can be reproduced, and at what cost in terms of resources.

Corpus - Letter Based Language Classification **Python** | https://tinyurl.com/lt-cor **Winter 2018**
Output: Identify which parts of the contribution in the chosen paper - Convolving DNA using two-dimensional hilbert curve representations -- can be reproduced, and at what cost in terms of resources.

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