NICOLAS RAGA

www.nicolasraga.com | nraga@berkeley.edu |+1 (786)246-6872

EMPLOYMENT HISTORY

Software Development Engineer II at Amazon **Seattle, WA**

M5 - Search Science and AI *Jan 2022 - Present*

- Designed the availability metric infrastructure for our distributed machine learning platform. Extended to automatically test changes end-to-end via real training jobs, blocking CI/CD deployment pipelines before issues can reach customers.
- We manage the largest deep-learning training platform in Amazon, supporting Foundational NLP models of up to 1.5B parameters, TB/s of training data, checkpointed start/stops, and more on an optimized distributed network of machines.

Kinesis Data Analytics - AWS *May 2020 - Jan 2022*

- Identified and filed a bug in Apache Flink's thread pool management that caused complete unavailability of customer's endpoints at peak workloads. I authored and published a fix that increased REST endpoint throughput by more than 400% and is now merged into Apache Flink's open-source codebase.
- Automated patching of over 200,000 hosts running real-time streaming applications. Shortened deployment time from 4 months of active effort to 1 week of automated processes with engineering effort of less than an hour.
- Helped implement managed features and automate testing for release of Flink 1.11.

Finance Technology *August 2019- May 2020*

- Built multiple features for Amazon Finance's big data processing platform. We allow customers to automate the management of AWS Elastic Map Reduce (EMR) clusters and processing of ETL jobs from most data lakes at Amazon.
- Created integration with AWS Glue, allowing automated metadata generation for Apache Hive and Apache Spark jobs.
- Built distributed components using AWS Kinesis, SNS, SQS, Lambda, and many more AWS services.

Software Engineer Intern at Visa **Foster City, CA**

Innovation Development Team *May - August 2018*

- Created a configuration manager that allowed our micro-services to update automatically, decreasing the need for deployments by 70% and increase product uptime by 1.7x.
- Implementing a hybrid encryption scheme for fast communication of our Secured Rapid Pay data transfers.
- Automated a pipeline for build-verification tests and result broadcasting. Created a system for test generation on Postman, custom HTML reports, and command line controls to integrate with Jenkins jobs.

Software Engineer Intern at suitX **Berkeley, CA**

Exoskeleton Controls Team *May - August 2017*

- Implemented live parameter tuning and data visualization on exoskeletons by creating a loss-less communication architecture using TCP/IP and Bluetooth. Users can easily view measurement graphs and tune motor parameters.
- Ran C++ server on the exoskeleton that connects via TCP or BLE to a Python multithreaded GUI. Secured using proprietary 7-bit serialization using MBED, SWIG, and Google Protobuf libraries.

Computer Vision Researcher at UC Berkeley **Berkeley, CA**

Mechanical Systems Control Laboratory *May - August 2016*

- Used Microsoft Kinect to generate 3D point-clouds, enabling computation of tangent spaces, allowing a robot to manipulate deformable objects (ropes, sheets, etc.) in a single training stage.

EDUCATION

UNIVERSITY OF CALIFORNIA - BERKELEY **Berkeley, CA**

B.S. Electrical Engineering and Computer Science *2015 - 2019*

- Machine Learning, Artificial Intelligence, Databases, Networks and Internet Protocols, Computer Architecture, Computer Algorithms, Software Engineering, Convex Optimization, Probability and Random Processes, Data Structures, and OOP.

MIT LAUNCH PROGRAM **Boston, MA**

Entrepreneurship Certificate *June – July 2014*

PROJECTS

DeepFashion Explainability in Benchmark Performance *Spring 2019*

- Implemented state of the art deep learning models on DeepFashion dataset. Focused on explainability of learning using visualization techniques t-SNE and PCA Analysis, Gradient Class Activated Saliency Maps, Weighted Heat Maps, etc.

Secure File Sharing and Storage *Spring 2018*

- Designed and built a secure Dropbox-clone that employs hybrid encryption and allows for transitive sharing controls, revoking, and deleting. Used RSA Encryption, SHA256 Hashing, MAC's, and self-contained storage.

Cancer DNA Sequencing *Spring 2018*

- Identified oncogenes correlated to the development of skin cancer, allowing doctors to predict the condition with 60% accuracy. Used Monte Carlo Markov Chains trained on an open-source dataset of patient DNA samples.