Aayush Agrawal

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Summary

Result driven and curious individual with 2 years of software engineering experience, and a strong foundation in data structures, algorithms and object oriented programming, along with practice in machine learning.

Education

Courant Institute of Mathematical Sciences, New York University — May '23 (expected)
Masters of Science, Computer Science; GPA: 3.75/4.0 — *New York, USA*

Dhirubhai Ambani Institute of Information and Communication Technology — May '19
Bachelor of Technology, Information and Communication Technology; GPA: 6.78/10 — *Gandhinagar, India*

Technical Skills & Certifications

Languages: Java, Python, SQL (proficient) | C, C++ (intermediate) | Ruby, Javascript (basic)

Frameworks: SpringBoot MVC, Gradle, JUnit, Mockito, React, Flask, Ruby on Rails

Tools and Libraries: Git, Postgres (proficient) | pandas, numpy, matplotlib, pytorch (intermediate) | MongoDB, Docker (basic)

Open Source Contributions: fastai #2528, mongo-ruby driver #1537

Certifications: Kaggle - Python, Pandas, Data Visualization, fastai - Machine Learning for Coders, SAC - ISRO internship

Experience

New York University - Graduate Assistant — Jan '21 – Present
Fundamental Algorithms, Computer System Organization, Data Structures, Algorithmic Problem Solving — *New York, USA*

- Held online tutoring sessions to assist students with coursework as well as proof read and graded assignments.
- Created autograder scripts in bash and Python for automation in Gradescope.

Cognitree Technologies - Software Engineer — July '20 – March '21
Technologies: Java, PostgreSQL, Google Cloud Storage, Git, Maven, Gradle, Logging, JUnit — *Bangalore, India*

- Integrated data pipelines for CircleCI, Snyk and Bullseye which included documentation, API design, migrations, ingestions, pagination, controllers, query building and unit tests.
- Built module to read and query ≈1.5 GB .dat files using iterator batching, streams, generics and ExecutorService.

Tally Solutions Pvt. Ltd. - Software Engineer — July. '19 – Jan '20
Technologies: C++, Git — *Bangalore, India*

- Devised caching using in-memory storage for color objects across interface components that reduced load time by over 20%.
- Prototyped memory pool and cron scheduler using circular linkedlist; object oriented database using File I/O operations.

Clarisights LLP - Software Developer Intern — Jan '19 – Jun '19
Technologies: Ruby on Rails, PostgreSQL, MongoDB, Git, Docker — *Bangalore, India*

- Ensured SLAs by resolving ingestion and failed cron job issues in legacy data pipeline integrations, therefore keeping databases in sync with actual values by debugging platform features, backfilling, migrations and scripting.

Projects

Attention based Image Captioning (Supervisor: Rob Fergus)
Technologies: Python, Pytorch

- Built an encoder-decoder structured model with pretrained and parameterized CNN based encoders like VGG16 and ResNet50. Decoders were implemented as bidirectional LSTM based Recurrent network along with Attention heads.

Scheduler (Operating System) (Supervisor: Hubertus Franke)
Technologies: C++, Git

- Built Discrete Event Simulator driven generic process scheduler to implement algorithms like FCFS, LCFS, SRTF, Priority and Preemptive Priority in an object oriented way using inheritance.

Neural network in Numpy & exposing it as webapp via Flask
Technologies: Python, Numpy, Pandas, Flask, Javascript

- Simulated Pytorch to implement forward and backward pass of neural networks in Numpy in object oriented way to facilitate easy customization of models. Used it to train MNIST digits data and exposed it as webapp using Flask and Javascript.

Voice Conversion (Supervisor: Prof Hemant Patil)
Technologies: Python, Tensorflow, Numpy, Pandas, Scipy

- Prepared samples of MFC Coefficients from WAV files. Aligned feature vectors of source and target speakers by Dynamic Warping algorithm. This mapping was used as training data for neural network which resulted in 86% accuracy of mapping.