

Ashish D'Souza

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EDUCATION

Georgia Institute of Technology | Atlanta, GA

May 2023

- Bachelor of Science in *Computer Science* — Threads: Intelligence & Information Internetworks — GPA: 3.93

EXPERIENCE

Citadel Securities | Software Engineer Intern | *Citadel Execution Services* | New York City, NY

Sep '22 - Dec '22

- Developed high-performance C++ trade reconciler for live messages with multithreading for extreme scalability
- Validated messages originating from retail and institutional trade routing systems with historical database records for all CES flow types

Akuna Capital | Software Engineer Intern | *Compliance Team* | Chicago, IL

Jun '22 - Aug '22

- Wrote an audit trail generator to efficiently parse terabytes of order entry messages on a daily basis to respond to exchange inquiries
- Created market maker quoting surveillances to ensure the company meets exchange standards for newly traded cryptocurrency options

Amazon | Software Engineer Intern | *Magnus Ranking, Search Science & AI* | Palo Alto, CA

May '21 - Aug '21

- Built distributed computing platform to further improve GPU-accelerated training speed by parallelizing advanced ML models
- Enabled multi-GPU training on multiple machines for BERT, GPT-3, DNN models using PyTorch with distributed data parallelism

MerchLogix | Software Engineer Intern | *Database Team* | Atlanta, GA

May '20 - Aug '20

- Developed audio transcription database with PostgreSQL and scripted advanced database management functions using Perl

Optical Science Center for Applied Research | Research Intern | *Laser Spectroscopy Team* | Dover, DE

Jun '17 - Jun '19

- Constructed an ultrasensitive IR-based trace gas sensing module with Arduino, under a NASA research grant for Mars exploration
- Scraped satellite data on greenhouse gases with Selenium and created forecasting/prediction models with TensorFlow neural networks

PROJECTS

Guardian | <https://github.com/computer-geek64/guardian>

Jan '22

- My home surveillance and CCTV system that features motion detection and synchronized live audio and video streams over native HTTP
- Implemented a multiprocessing load balancer to improve performance for multiple cameras, and leveraged shared memory for IPC
- Separated image processing from web server into a background process with a message queue, reducing overhead for multi-user streaming
- **Software:** Python, Docker, NGINX, NGINX Unit, Flask, Redis, FFmpeg, OpenCV, Motion, Docker Compose, Jenkins

Politify | <https://github.com/computer-geek64/politify>

Feb '21

- Determines the political bias among public figures by analyzing their tweets in an unbiased way using publicly available data on the internet
- Designed back-end API and DBMS, web scraped tweets and wiki sources to obtain information on public figures for dataset aggregation
- Trained BERT model for political classification and used cloud ML services to create keyword-based sentiment analysis helper model
- **Software:** Python, PyTorch, Transformers, CUDA, Pandas, Flask, PostgreSQL, ReactJS, Selenium, OpenAI GPT-3, Google Cloud

Huffskew | <https://github.com/computer-geek64/huffskew>

Jan '21

- An optimization of the Huffman compression algorithm for highly skewed alphabet distributions using an ordered replacement method
- **Software:** C++, Boost Libraries

Fizz | *BlackRock Winning Project at HackGT7* | <https://devpost.com/software/hackgt7>

Oct '20

- A web-based interactive personal financial consultant, providing the beginning investor with insight rivaling that of financial experts
- Developed the back-end API and managed a database cluster. Also helped design the NLP model and financial analysis assessments.
- **Software:** Python, Flask, SQL, JavaScript, ReactJS, DataStax Astra, Google Dialogflow, Google Firebase

COVID-19 Survival Calculator | <https://github.com/computer-geek64/covid19-survival-calculator>

Mar '20

- A web application that allows users with the coronavirus to calculate the probability of their survival
- Programmed the back-end REST API and developed the user demographics database system. Also web scraped for and ran data analysis on live COVID-19 datasets, and helped devise the gradient boosting machine learning models.
- **Software:** Python, Django, Jinja, PostgreSQL, Pandas, XGBoost, LightGBM, Ruby, Nokogiri, JavaScript, HTML/CSS

Firestorm | <https://github.com/computer-geek64/firestorm>

Dec '18 - Present

- Created and maintained a personal server for file sharing, automated backups, personal informatics, media streaming, gaming, etc.
- Built a remote private projects VCS hosting system using Git and backed by a PostgreSQL database, accessible through the web interface
- **Software:** Python, Flask, Jinja, PostgreSQL, SQLite, HTML/CSS, JavaScript, Apache, CentOS 8

SKILLS

- **Programming Languages:** Python, C/C++, Java, SQL, Bash, JavaScript, HTML/CSS, \LaTeX , Perl, Ruby, PHP, R
- **Frameworks:** Flask, FastAPI, Django, Pandas, PySpark, PyTorch, TensorFlow, Boost, Spring Boot, Pistache, Rails, OpenCV, SocketIO
- **Software:** Git, Docker, Databricks, Spark, NGINX, NGINX Unit, Apache HTTP, Kafka, Ansible, Jenkins, Maven, AWS, GCP, Azure
- **Databases:** PostgreSQL, MySQL, Redis, MongoDB, Apache Cassandra, SQLite, MariaDB
- **Operating Systems:** Linux (Arch, CentOS, RHEL, Debian, Fedora, Ubuntu, Raspbian, Kali, Qubes), Windows, OS X