Aman Choudhary

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Education

University of Michigan, Ann Arbor **August 2020 – December 2023**

Bachelor of Science in Engineering in Computer Science *GPA: 3.8/4*

Coursework: Distributed Systems, Natural Language Processing, Computer Vision, Operating Systems, Web Systems, Machine Learning, Computer Security, Computer Architecture, Linear Algebra, Multivariable Calculus, Advanced Probability

Technical Skills

Programming Languages: C++, Python, JavaScript/Typescript, SQL, Go, Rust, Scala, MATLAB, Java, HTML/CSS
Libraries/Frameworks: (ML/AI) TensorFlow, Keras, scikit-learn, NLTK, PyTorch, OpenCV (Web Dev.) Flask, Django, React/Next.js, Node.js/Nest.js, Apache Cordova (Databases) MySQL, Cassandra, Redis, Kafka, MongoDB, PostgreSQL
Software Development Tools: Git, Docker, AWS, Unix, NGINX, Kubernetes, Jenkins

Work Experience

Deepgram, Inc. **May 2023 – August 2023**

Software Engineering Intern *San Francisco, CA*

- Created an automated CI/CD pipeline with GitHub Actions to run a suite of Rust tests against new releases of automatic speech recognition engine, reducing deployment speeds by 95% and increasing confidence in release process
- Wrote a custom Rust crate to evaluate ASR transcription quality that was 10x faster than existing Rust libraries, and built a REST API server with Flask, NGINX, and Docker to provide cached audio data for evaluation calculations
- Investigated using dynamic batch size allocations for their ASR inference engine to optimize memory consumption and increase throughput, achieving a 1.3x speedup with similar accuracy

Criteo Co. **May 2022 – August 2022**

Software Engineering Intern *Ann Arbor, MI*

- Developed an Apache Spark pipeline in Scala to improve monitoring of data quality of retail media advertising events, using Hive to store real-time updates, Grafana to visualize metrics, and a custom job scheduler to automate workflow
- Fine-tuned a suite of Spark jobs that process large-scale advertising event datasets on an hourly basis, resulting in an improved run time and resource efficiency of data processing workflow

Trashbots Co. **June 2021 – August 2021**

Software Engineering Intern *Austin, TX*

- Expanded their web-based coding interface with several new features using JavaScript and Cordova, empowering the platform to teach more advanced programming concepts to over 1500 K-12 institutions across the United States
- Updated MicroBit-based robot firmware with C++ and reduced bluetooth latency across product updates

Research Experience

Michigan Vision Lab **January 2024 – Present**

Visiting Computer Vision Researcher *Ann Arbor, MI*

- Exploring methods for camera calibration and pose estimation driven by neural networks and vision transformers to achieve superior performance on applications involving structure from motion (SfM) and 3D scene reconstructions
- Latest work involves improving state-of-the-art methods for extreme rotation estimation between images with low to no overlap by making them gravity-aware

Diagnostic Intelligence Augmented for Global Health (DIAG) **January 2023 – December 2023**

Data Engineering, Modeling, and AI Researcher *Ann Arbor, MI*

- Performed a study on effectiveness of deep convolution neural networks in accurately classifying bladder cancer
- Leveraged a combination of Inception v3 architecture with artificial features extracted from ImageNet, achieving an 87% classification accuracy on TCGA bladder cancer dataset

Predicting News Reader Feedback with Deep Learning **August 2021 – April 2022**

Undergraduate Research Opportunity Program (UROP) Researcher *Ann Arbor, MI*

- Performed linguistic analysis of questions and comments on social media posed to new stories, developing machine learning models to help news organizations anticipate information needs of their audiences using scraped Reddit data

Projects

Distributed Key-Value Database: Designed a sharded key-value storage system, utilizing Paxos consensus for replication and a shard master for dynamic reconfiguration, enabling fault tolerance and load balancing across multiple servers

Scalable Search Engine: Built a scalable search engine using PageRank ranking system, a segmented inverted index of scraped web pages created with Hadoop framework, and a distributed system for determining search results

Operating System: Wrote a thread library, virtual memory pager, and networked file system with C++

Extracurriculars: Michigan Hackers (ML Team Lead), V1 Entrepreneurship, Michigan Mars Rover Perception Team