Aditya **Vikram**

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Education

Georgia Institute of Technology, Atlanta, GA *GPA: 4.0*

M.S. in Computer Science, Specialization: Computing Systems *Aug 2022 - May 2024 (Expected)*

- Coursework: Advanced Operating Systems, Computer Vision, Natural Language Processing, Machine Learning Theory, Applied Cryptography

Indian Institute of Technology Kanpur, India *CGPA: 9.7/10*

B.Tech. in Electrical Engineering, Minor in CSE (Algorithms and Machine Learning) *Jul 2014 - Jun 2018*

- Received Academic Excellence Award for outstanding academic performance for academic years 2016-17, 2015-16 and 2014-15
- Relevant coursework: Algorithms-II, Randomized Algorithms, Machine Learning, Natural Language Processing, Probabilistic Machine Learning

Experience

Georgia Institute of Technology *Atlanta, GA, USA*

Graduate Teaching Assistant *Oct 2022 - Present*

- Assisted in teaching CS 7641 "Machine Learning": clarified students' doubts and provided feedback on their experiments and project reports

Adobe Inc. *Bengaluru, India*

Computer Scientist - I *July 2018 - Aug 2022*

- Received two Spot Awards and a Special Contribution Award for exemplary contributions to multiple critical projects
- Key contributor in the design and implementation of the extensibility platform for Creative Cloud web, aimed at boosting developer engagement
- Developed a user-facing request-access workflow using React and Redux to enable seamless collaboration in cloud documents
- Conceived a modularized architecture for an iOS UI library using CocoaPods, reducing multiple Adobe apps' size by 5 MB. Resulted in faster downloads and an enhanced user experience
- Added efficient analytics support for a Universal Windows Platform (UWP) SDK, leading to fixes for 15% of the observed SDK crashes
- Created a retry-reconnect mechanism to address the flaky UWP app-service connection, resulting in a 10% reduction in reported crashes
- Optimized performance and launch time of paywalls in an iOS SDK by 50% by caching purchase metadata, resulting in improved response time

Adobe Inc. *Bengaluru, India*

Research Intern *May 2017 - July 2017*

- Participated in ideation and surveying existing work within the problem area of Virtual Reality (VR) websites, leading to the selection of the problem statement: "Visualizing and designing a navigable interface for a large-scale image gallery on a 360° canvas"
- Formed an image similarity graph from a 150,000 image corpus and introduced a tag-based image search intuitive to VR users. Proposed a novel layout for a VR gallery and demonstrated it on Samsung Gear VR. This project was later showcased at Adobe's internal TechSummit 2019

Selected Projects

Projection-free Online Learning: A Review [Report] *Prof. Jake Abernethy, Georgia Tech*

Course Project: Machine Learning Theory *Apr 2023 - May 2023*

- Conducted a survey of methods to overcome the computational bottleneck of the projection step in the Online Gradient Descent algorithm
- Summarized two alternate approaches: the Online Frank-Wolfe and Fast Approximate Projection algorithms, including their key insights, and evaluated them based on metrics like domain assumptions, time complexity and regret bounds

GTStore [Report] [Code] *Prof. Ada Gavrilovska, Georgia Tech*

Course Project: Advanced Operating Systems *Apr 2023*

- Designed a distributed key-value store that provides fault-tolerance by data replication, and realized it using gRPC in C++
- Implemented a data partitioning scheme to ensure even load distribution and a heartbeat mechanism for load-balancing on storage failures
- Assessed the system's throughput (around 600 ops/s) and showed that it depends hyperbolically on the number of storage replicas

GTFileSystem: A recoverable file system [Report] [Code] *Prof. Ada Gavrilovska, Georgia Tech*

Course Project: Advanced Operating Systems *Mar 2023 - Apr 2023*

- Authored a File System library with the goal of data persistence and crash recovery using in-memory logs and disk logging
- Developed a transaction system allowing commit, abort and flush ops for file writes, and a read API for efficient data retrieval
- Simulated crash scenarios and wrote a comprehensive test suite with unit and integration tests for near-100% code coverage

TinyFile Service and Client [Report] [Code] *Prof. Ada Gavrilovska, Georgia Tech*

Course Project: Advanced Operating Systems *Feb 2023 - Mar 2023*

- Designed the TinyFile service and client library with sync and async APIs for concurrent file compression while adhering to Xen's Dom0 paradigm
- Used System-V IPC and semaphores for synchronization, and shared memory segments for efficient data transfer between service and clients
- Analyzed the impact of number and size of SHMs on the client-side service time, and proposed optimal size (4096-8192) and number (5) of SHMs

Grammatical Error Correction in Sentences [Report] *Prof. Harish Karnick, IIT Kanpur*

Course Project: Introduction to Natural Language Processing *Jan 2018 - Apr 2018*

- Analyzed a sequence-to-sequence model in Keras for grammatical error correction in sentences, using LSTMs for encoding and decoding
- Trained the seq2seq model on the NUCLE dataset with sub-sampling, achieving a testing accuracy of approximately 64%, precision of 0.59, and provided recommendations for enhancing correction accuracy

Technical Skills

Languages C++, Python, TypeScript, Objective-C, JavaScript, Swift, Shell, LaTeX

Frameworks and Tools ReactJS, NodeJS, Redux, gRPC, CMake, Cocoapods, PyTorch, scikit-learn, TensorFlow, Keras, Pandas, Git, Docker