

Aditya Vikram

✉ adityavikram54@gmail.com | ☎ (404)397-3655 | 🏠 adityavk.github.io | 📷 adityavk | 🔗 linkedin.com/in/adityavk | 📍 Atlanta, GA

Education

Georgia Institute of Technology, Atlanta, GA

GPA: 4.0

M.S. IN COMPUTER SCIENCE, SPECIALIZATION: COMPUTING SYSTEMS

Aug 2022 - May 2024 (Expected)

- Relevant coursework: Advanced Operating Systems, Graduate Algorithms, Machine Learning Theory, Applied Cryptography, Dynamic Algebraic Algorithms

Indian Institute of Technology Kanpur, India

CGPA: 9.7/10

B.TECH. IN ELECTRICAL ENGINEERING, MINORS IN ALGORITHMS AND MACHINE LEARNING

Jul 2014 - Jun 2018

- Received *Academic Excellence Awards* for outstanding academic performance for academic years 2016-17, 2015-16 and 2014-15
- Coursework: Algorithms-II, Randomized Algorithms, Machine Learning, Natural Language Processing, Probabilistic Modeling & Inference

Work Experience

Georgia Institute of Technology

Atlanta, GA, USA

GRADUATE TEACHING ASSISTANT

Oct 2022 - Present

- Assisted in teaching CS7641 Machine Learning: clarified doubts, provided feedback to students on the techniques used, evaluated their reports

Adobe Inc.

Bengaluru, India

COMPUTER SCIENTIST - I

July 2018 - Aug 2022

- Recognized with Spot Awards in FY 2019-20 and 2020-21, and a Special Contribution Award in FY 2021-22 for exemplary contributions to critical projects at Adobe
- Key collaborator in architecting and implementing the third-party extensibility platform for Creative Cloud web, aimed at boosting developer engagement. Additionally, facilitated knowledge transfer by explaining the architecture to onboard new team members
- Implemented a user-facing request-access workflow using React and Redux to enable seamless collaboration in cloud documents
- Designed and implemented a modularization process for an iOS UI library using CocoaPods, reducing multiple Adobe apps' size by 5 MB. Resulted in faster downloads and an enhanced user experience
- Implemented analytics for a Universal Windows Platform (UWP) SDK, enhancing debugging and crash detection analysis. Also developed a batching and caching mechanism to reduce network calls and collect analytics in offline state
- Implemented 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%, resulting in increased revenue through enhanced user experience

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 implemented a tag-based image search intuitive to VR users
- Proposed a novel layout for a VR image gallery and implemented it in Unity for Samsung Gear VR. The project was selected and showcased at Adobe's TechSummit 2019 in San Francisco

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 and implemented a distributed key-value store using gRPC, that provides fault-tolerance by data replication
- Implemented a data partitioning scheme to ensure even load distribution and a heartbeat mechanism for load-balancing on storage failures
- Evaluated the system's throughput and showed that it depends hyperbolically on the number of storage replicas, and proposed optimizations

GTFileSystem Report] Code]

Prof. Ada Gavrilovska, Georgia Tech

COURSE PROJECT: ADVANCED OPERATING SYSTEMS

Mar 2023 - Apr 2023

- Implemented the GT 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 implemented a read API for efficient data retrieval
- Simulated crash scenarios and created 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

GTThreads and Credit Scheduler Report] Code]

Prof. Ada Gavrilovska, Georgia Tech

COURSE PROJECT: ADVANCED OPERATING SYSTEMS

Jan 2023 - Feb 2023

- Enhanced a basic GTThreads library by implementing Xen Credit Scheduler, where threads receive CPU time proportional to their allotted credits
- Developed load-balancing and yield features to optimize performance for the scheduler and conducted experiments to compare performance with the O(1) priority scheduler, analyzing CPU time and wall time for different thread configurations

Online MCMC based Bayesian Inference Report]

Prof. Piyush Rai, IIT Kanpur

COURSE PROJECT: TOPICS IN PROBABILISTIC MODELING AND INFERENCE

Jan 2018 - Apr 2018

- Conducted a survey of Online Markov Chain Monte Carlo (MCMC) methods, crucial for performing Bayesian inference on large datasets
- Implemented and evaluated the Stochastic Gradient Riemannian Langevin Dynamics (SGRLD) algorithm, and showed its benefits (2.5x faster convergence and 10-20x faster iterations) over the Online Variational Bayes (OVb) algorithm for Latent Dirichlet Allocation model over simplices

Grammatical Error Correction in Sentences Report]

Prof. Harish Karnick, IIT Kanpur

COURSE PROJECT: INTRODUCTION TO NATURAL LANGUAGE PROCESSING

Jan 2018 - Apr 2018

- Implemented 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

Interior Point Methods: A Survey Report]

Prof. Ketan Rajawat, IIT Kanpur

TERM PAPER: CONVEX OPTIMIZATION IN SIGNAL PROCESSING AND COMMUNICATION

Jan 2018 - Apr 2018

- Conducted a survey of interior point methods, focusing primarily on deriving interior point methods for ℓ_1 -regularized least squares and logistic regressions using logarithmic barrier functions
- Implemented an interior point method for ℓ_1 -regularized least squares and compared its running time with other state-of-the-art programs on a sparse recovery problem with a large matrix

Brittle ML: Playing Satan Report]

Prof. Purushottam Kar, IIT Kanpur

COURSE PROJECT: INTRODUCTION TO MACHINE LEARNING

Aug 2017 - Nov 2017

- Explored different adversarial attacks on machine learning models, with a focus on Convolutional Neural Networks (CNNs)
- Implemented a successful blackbox attack in Tensorflow to craft adversarial examples for images, specifically targeting the Inception-v3 model

PhotoEditor Report] Code]

Prof. Tanaya Guha, IIT Kanpur

COURSE PROJECT: DIGITAL IMAGE PROCESSING

Aug 2017 - Nov 2017

- Implemented a red-eye correction algorithm by combining region-growing and morphological image processing techniques
- Improved red-eye detection accuracy by applying thresholding, shape filtering and tuning eye-detection parameters to reduce false positives
- Implemented an object removal feature using the image inpainting algorithm proposed by Criminisi et al. and optimized its performance

Advances in MIMO: System Model and Potentials Report]

Prof. Aditya Jagannatham, IIT Kanpur

TERM PAPER: PRINCIPLES OF COMMUNICATION

Aug 2016 - Nov 2016

- Performed a literature survey on Multiple-Input Multiple-Output (MIMO) systems and its potential in 4G and 5G
- Explained the mathematical modeling of MIMO systems and reviewed latest developments like Multi-user MIMO, Massive MIMO and MIMO-OFDM techniques, emphasizing their importance in cellular communication systems

Technical Skills

Languages	C++, Python, TypeScript, Objective-C, JavaScript, Swift, Shell, \LaTeX
Frameworks	ReactJS, NodeJS, Redux, gRPC, CMake, Cocoapods, Pandas, scikit-learn, TensorFlow, Keras
Tools	Git, Docker, Jira