Aditya "Adi" Acharya

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BIO

PhD. candidate in Computer Science looking for full time industry positions in 2026. Interested in Data Science, and Software Engineering related fields, after years of experience in fundamental and applied research.

EDUCATION

Ph.D., Computer Science, *University of Maryland*, College Park, *GPA:3.92* —— May 2026 (expected)

Masters, Computational Science, *Indian Institute of Science*, Bangalore

Bachelors, Electrical Engineering, *Indian Institute of Technology*, Kharagpur

SELECTED RESEARCH/ TECHNICAL EXPERIENCE

Efficient Algorithms for processing Evolving Geometric data, [1]
PhD Thesis with Prof. *David Mount*, Computer Science, University of Maryland May '20 - ongoing

- Developed a novel Geometric Framework to maintain Data-Structures on large number of evolving points.
- Designed optimal Algorithms to minimize objectives like *Communication Complexity*, and *K-L Divergence*.
- Applications in *Data Science, High-Dimensional motion planning, Variational Inference, Concept Drift* etc.

High Dimensional SVM problem in the Hilbert metric, [2]
Research project with Prof. *David Mount*, Computer Science, University of Maryland Oct '24 - ongoing

- Designed an efficient optimization based algorithm for finding the *Support Vector Machines* in Hilbert Metric
- Hilbert metric is a non-euclidean metric finding recent favor in *Computer Vision*, and *Data compression*.
- Applications in *Machine Learning, Convex Optimization, Classification, Clustering, Embedding* etc.

Parallel Algorithms for computing Geometric and Topological Data Structures, [3]
Masters Project, Indian Institute of Science May '13-Jun '15

- Implemented *parallel*, and *memory efficient* algorithms for constructing the Contour tree, and Delaunay Triangulations: topological structures helpful in *visual analysis* and exploration of geometric datasets.
- Used parallel programming technologies like *CUDA, OpenMP, MapReduce* on *Highly-Distributed Systems*.

Network Analysis of Brain by EEG signal processing, [4]
Electrical Engineering, Indian Institute of Technology, Kharagpur Dec '09-Dec '12

- Analyzed EEG signals to interpret complex *network measures* of brain connectivity. Used *graph theoretical* measures like *clustering* coefficient, global efficiency, small world properties to quantify fatigue in drivers.
- Used *pandas* for data wrangling, and *NumPy+SciPy* for scientific computation, and optimization.

SKILLS

Programming:
- Python
- C
- SQL

Scientific/Mathematical:
- Mathematica
- SciPy
- NumPy

Data Science/ ML:
- pandas
- Scikit-learn
- Tensorflow
- Matplotlib

Cloud platform:
- AWS: SageMaker, Lambda, RDS etc.

Database:
- SQLite
- PostgreSQL

Parallel Programming:
- PySpark
- SparkML
- MPI
- OpenMP

Developer Tools:
- JupyterLab
- Docker
- Git

Other:
- HTML/CSS
- LaTeX
- Markup

LEADERSHIP/ MENTORSHIP

Full time Lecturer, and part time Teaching Assistant at University of Maryland May '18 - ongoing

- Redesigned and taught CMSC 250, *Discrete Structures*, to a class size of 50+, with great reviews.
- Teaching Assistant, and part time Instructor for CMSC451, an *Advanced Algorithms* course.
- Involved in mentoring and career counseling for undergrads with a focus on Theoretical Computer Science.

Instructor and Volunteer at Interdisciplinary Data Science club at UMD May '24 - ongoing

- Example of a recent course I taught: *Big Data Analytics with PySpark* [link], covering the fundamentals of the Python API, map-reduce, dataframes, databases, and machine learning on Spark.
- Demonstrated an end-to-end economical RAG Model on AWS, that can handle multiple query types: *Serverless Retrieval Augmented Generation for answering statistical and natural language queries* [link]. Used skills from Lambda Function, REST API, LLM & embedding APIs, to vector databases, and PostgreSQL.

SELECTED PUBLICATIONS (SHORT TITLES)

[1] *Evolving Distributions Under Local Motion*, (WADS 2025), Acharya, Mount

[2] *Support Vector Machines in Hilbert Geometry*, (WADS 2025), Acharya, Gezalyan, Vanecek, Mount, and Arya

[3] *A Parallel and Memory Efficient Algorithm for the Contour Tree*, (Pacific Vis 2015), Acharya, Natarajan

[4] *Phase Synchronization based Networks for Classifying levels of Fatigue*, (ICSMB 2010), Acharya, Kar, Routray