Aditya Kumar Akash

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Education

Sept 2018 - Present — **MS** *Computer Science*, University of Wisconsin, Madison
GPA : $4/4$

Aug 2016 — **Bachelors of Technology with Honors,** *Computer Science and Engineering*, Indian Institute of Technology, Bombay, GPA : $9.18/10$

Work Experience

Summer 2020 — **Amazon** *Applied Scientist Intern*
- Research done on out-of-distribution detection methods for computer vision

July 2016 - July 2018 — **Google, Maps Auto-Moderation Team** *Software Engineer, Bangalore*
- Worked on auto-moderation system which is responsible for moderating millions of user generated edits on Google Maps and preventing spam and graffiti attacks
- Designed and launched the re-moderation system (internally) to moderate backlog edits on which the original model was uncertain
- Built user consensus and trust models for leveraging user votes to better decide the acceptance of edits on Maps
- Integrated news popularity of edited Maps features to prevent graffiti attacks

Summer 2015 — **Microsoft, Bing Ads Team** *Software Engineer Intern, Bangalore*
- Worked on problem of predicting CTR (click through rate) for ads on Bing Search
- Designed and launched a metasearch based score combination system on Microsoft's internal big data platform and showed promising gains in market

Graduate Projects

Fall 2020 — **Resource Efficient Fusion of Deep Networks**
Guide: Prof. Nicolas Garcia Trillos, *Ongoing*, [Abstract]
- Working on a principled approach to efficiently fuse multiple deep learning models using optimal transport
- Our proposed framework has applications in distilling knowledge into smaller models and combining models under distributed training settings

Fall 2020 — **Identifying the optimal degree of parallelism for distributed gradient boosting algorithm,** *Course Project, Big Data Systems*, *Ongoing*, [Proposal]
- Working with XGBoost, a scalable end to end tree boosting algorithm, in distributed setting under large workloads ($\sim$1 TB)
- Investigating the optimal degree of parallelism for XGBoost, specifically the trade-offs between the latency and accuracy with framework parameters

Spring 2020 — **Learning Invariant Representation using Inverse Contrastive Loss (ICL)**
Guide: Prof. Vikas Singh, [Abstract]
- Proposed a new loss to learn representations of data invariant to an extraneous variable of interest eg. race, gender
- The method has applications in learning unbiased representations, pooling data from multiple sites without site bias, fairness

Fall 2019 — **FairALM: Augmented lagrangian method for training fair models with little regret** *Guide: Prof. Vikas Singh*, [paper]
- Worked on imposing fairness constraints on deep models for computer vision
- The proposed method leads to a stable enforcement of constraint and improves model interpretability

Other Projects

Autumn 2015 - Spring 2016 **Consensus-based Active Learning Strategy for Multi-Label Classification**
Undergraduate Dissertation, IIT Bombay, Guide: Prof. Ganesh Ramakrishnan
- Worked on problem of multilabel classification for predicting video tags
- Designed an active learning based strategy that optimizes the cost of labeling, labeler reliability and inter-labeler consensus [report part1][part2] [relevant publication]

Spring 2015 **Threading and Scheduling in GeekOS**, Guide: Prof. D.M. Dhamdhere
- Added multilevel and round robin scheduling policy in GeekOS, an experimental OS
- Implemented kernel and user level thread creations, and deadlock handling, [report]

Autumn 2014 **Code Corpus**, Guide: Prof. N.L. Sharda
- Created a corpus for competitive programming problems with sophisticated search options
- Added intelligent options for auto suggestion of problems and users to follow, [report]

Academics

Graduate Courses: Big Data Systems, Modern Data Management and Machine Learning Systems, Advanced Algorithms, Mathematical Foundation of ML, Deep Learning, Non-linear Optimization

Skills: C, C++, Java, Python, MATLAB, Pytorch, TensorFlow, Hadoop, Spark

Publications

2020 **Learning Invariant Representation using Inverse Contrastive Loss**
Aditya Kumar Akash, Vishnu Suresh Lokhande, Sathya N. Ravi, Vikas Singh
Under Review [Abstract]

2020 **FairALM: Augmented lagrangian method for training fair models with little regret**
Vishnu Suresh Lokhande, Aditya Kumar Akash, Sathya N. Ravi, Vikas Singh
16th European Conference on Computer Vision (ECCV-20) [link]

2019 **Stochastic bandits with delayed composite anonymous feedback**
A. K. Akash, S. Garg, *NeurIPS 2019 Workshop on Machine Learning with Guarantees* [link]

2016 **Lower bounds for graph exploration using local policies**
A. K. Akash, S. P. Fekete, S.K. Lee, A.Lpez-Ortiz, D. Maftuleac, and J. McLurkin
10th International Workshop on Algorithms and Computations (WALCOM) [link]

2015 **Local policies for efficiently patrolling a triangulated region by a robot swarm**
D. Maftuleac, S.K. Lee, S. P. Fekete, A. K. Akash, A.López-Ortiz, and J. McLurkin
IEEE International Conference on Robotics and Automation (ICRA) [link]

Miscellaneous

2019, 2018 **Teaching Assistant** for Algorithms (CS577), Data structures (CS400), UW Madison

2017 **Co-hosted intern** at Google

2016 Winners in **ACM ICPC** Chennai regionals, **qualified for World Finals**

2013 **Invited by HRD Ministry**, Government of India, to witness Republic Day parade from Prime Minister's box, for academic excellence in senior secondary school

2012 **All India Rank 38** in *IIT JEE*, among 500,000 candidates

2012 **All India Rank 50** in *AIEEE*, among 1.5 million candidates