

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
 - Built user consensus and trust models for leveraging user votes to better decide the acceptance of edits on Maps
 - Designed and launched the re-moderation system (internally) to clear backlog edits using new latest signals
 - Improved the graffiti detection system by integrating news popularity of edited Maps features
- Summer 2015 **Microsoft, Bing Ads Team Software Engineer-ML Intern, Bangalore**
 - Worked on problem of predicting CTR (click through rate) for ads on Bing Search
 - Designed metasearch based query-keyword relevance score combination system
 - Implemented the solution on Microsoft's internal big data platform and showed promising gains in some markets

ML 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* [\[link\]](#)

Research Projects

- Spring 2020 **Learning Invariant Representation using Inverse Contrastive Loss (ICL)**
Guide: Prof. Vikas Singh, [\[Abstract\]](#)
 - Introduced ICL to learn representations invariant to an extraneous variable of interest
 - Applications in learning unbiased representations and pooling multi-site data
- Fall 2019 **FairALM: Augmented lagrangian method for training fair models with little regret**
Guide: Prof. Vikas Singh, [\[paper\]](#)
 - Joint work on imposing fairness constraints on deep models for computer vision
 - The proposed augmented Lagrangian method leads to a stable and consistent enforcement of constraint which improves the interpretability of deep models

- Fall 2020 **Model Fusion using Optimal Transport Framework**
Guide: Prof. Nicolas Garcia Trillos, Ongoing
 - Working on a principled approach to combine multiple deep models using optimal transport
 - Our proposed framework unifies the existing ad hoc methods and has applications in knowledge distillation and federated learning
- Spring 2019 **Stochastic bandits with delayed composite anonymous feedback**
 NeurIPS 2019 Workshop on Machine Learning with Guarantees [\[paper\]](#)
 - Extended multi-armed bandits to a novel setting for real world scenarios like clinical trials with delayed and anonymous rewards and proposed phase based UCB algorithm

Other Research Projects

- Fall 2019 **Improving Prediction Quality of Deep Autoregressive (AR) Models via Semi-Discrete Optimal Transport, Course Project,** [\[report\]](#)
 - Integrated concepts from semi-discrete Optimal Transport (OT) with deep AR models to improve the quality of generated images
- Spring 2019 **Reducing Inconsistency in Video Segmentation using Learned Regularizers**
Midwest Machine Learning Symposium (MMLS), 2019 [\[report\]](#)
 - Proposed learning consistency based regularizers from data to reduce inconsistency in video segmentation and designed Segnet based architecture for the same
- 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 [\[report part1\]](#)[\[part2\]](#) [\[relevant publication\]](#)
- Summer 2014 **Local counter-based policies for robot patrolling**
Research Intern, Technische Universität, Braunschweig, Guide: Prof. Sándor P. Fekete
 - Worked on theoretical aspects of swarm of mobile robots exploring an arbitrary graph and established a new lower bound on Least-Recently-Visited policy [\[paper1\]](#)[\[paper2\]](#)

Academics

- Graduate Courses Mathematical Foundation of ML, Big Data Systems, Modern Data Management and ML Systems, Deep Learning, Optimal Transport, Non-linear Optimization, Advanced Algorithms
- Skills C, C++, Java, Python, MATLAB, Pytorch, TensorFlow

Other Publications

- 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