Karthik Abinav Sankararaman

Department of Computer Science
University of Maryland, College Park

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Contact Information

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Interests

Algorithms, Machine Learning, Artificial Intelligence, Operations Research

Education

University of Maryland, College Park
PhD. in Computer Science — **September 2014 - August 2019 (Expected)**
M.S. in Computer Science — **December 2016**
Advisor: Dr. Aravind Srinivasan

Indian Institute of Technology, Madras — **August 2010 - July 2014**
B.Tech Honours in Computer Science and Engineering
GPA: 9.01/10
Minor: Operations Research
Thesis: Maximum Flow Problem in Undirected Graphs
Advisor: Dr. N.S. Narayanaswamy

Selected Publications (Authors ordered by Alphabetical order)

- John Dickerson, **Karthik Abinav Sankararaman**, Aravind Srinivasan, Pan Xu "Allocation Problems in Ride-Sharing Platforms: Online Matching with Offline Reusable Resources", *Proceedings of the 32th AAAI Conference on Artificial Intelligence (AAAI), 2018*
- Brian Brubach, **Karthik Abinav Sankararaman**, Aravind Srinivasan, Pan Xu "Algorithms to Approximate Column-Sparse Packing Problems", *Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), 2018*
- Brian Brubach, **Karthik A Sankararaman**, Aravind Srinivasan, Pan Xu "Attenuation-based Frameworks for Online Stochastic Matching with Timeouts", *Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2017*
  Full Version under submission to Algorithmica
- Brian Brubach, **Karthik A Sankararaman**, Aravind Srinivasan, Pan Xu "New Algorithms, Better Bounds, and a Novel Model for Online Stochastic Matching", *Proceedings of the 24th Annual European Symposium on Algorithms (ESA), 2016*
  Full Version under submission to Mathematics of Operations Research
- Yi-Chin Wu, **Karthik Abinav Sankararaman**, Stèphane Lafortune "Ensuring Privacy in Location-Based Services: An Approach Based on Opacity Enforcement", *Proc. of the 14th International Workshop of Discrete Event Systems (WODES), 2014*

Manuscripts

- **Karthik Abinav Sankararaman**, Alexandrs Slivkins "Combinatorial Semi-Bandits with Knapsacks", *Under review AISTATS-2018*
- **Karthik Abinav Sankararaman**, Kanthi K. Sarpatwar, Aravind Srinivasan, Kun-Lung Wu, Pan Xu "Budgeted Online Assignment in Crowdsourcing Markets: Theory and Practice", *Under review WWW-2018*
- John Dickerson, **Karthik Abinav Sankararaman**, Aravind Srinivasan, Pan Xu "Matching Workers to Tasks in Crowdsourcing Platforms: Two-Sided Online Matching", *In preparation AAMAS-2018*

Honors

- **Dean's Fellowship**: University of Maryland, 2014, 2015
- Recipient of the *S.N. Bose Scholarship* 2013 given to **top 50** Indian students.
- Awardee of the *National Talent Search Examination(NTSE)* Scholarship.
- 14th and 16th position in ICPC Mid-Atlantic regionals 2014 and ICPC Asia-Amritapuri regionals 2013 respectively.

Research Experience

Causal Inference **May 2017 - Present**
Visitor Indian Institute of Science, Microsoft Research, Bangalore
Joint work with Navin Goyal, Anand Louis
Working on algorithmic problems in theory of causal inference.

Bandit Algorithms and Online Learning **August 2016 - Present**
University of Maryland, College Park
Joint work with Alex Slivkins
Working on Bandit algorithms with global budget constraints.

Stochastic Optimization, Economics and Algorithms **August 2014 - Present**
University of Maryland, College Park
Joint work with Brian Brubach, Pan Xu, Aravind Srinivasan
Working on multiple problems such as crowdsourcing algorithms, budgeted allocation and matching problems.

Algorithms for Maximum Flow,
Graph Sparsification and related problems **Aug 2013 - Aug 2014**
Indian Institute of Technology, Madras
Area of Work: Spectral Graph Theory, Convex Optimization
Joint work with Narayanaswamy N.S.

Privacy in Location Based Services **May - July 2013**
University of Michigan, Ann Arbor
Area of Work: Cyber Security
Joint work with Yi-Chin Wu, Stèphane Lafortune

Teaching Experience

Teaching Assistant, University of Maryland
CMSC250 - Discrete Structures, CMSC131- Intro to Programming, CMSC451- Design and Analysis of Computer Algorithms
Responsibilities: Conducting Discussion Sessions, Office Hours, Grading Homeworks and Exams

Teaching Assistant, Indian Institute of Technology, Madras
Paradigms of Programming
Responsibilities: Grading Programming Assignments

Professional Experience

IBM Almaden Research Center, San Jose, CA **Summer 2016**
Manager: Shivakumar Vaithyanathan, Mentor: Prithviraj Sen
Inter-disciplinary project on Algorithms, Machine Learning and Finance
Karthik Abinav Sankararaman, Prithviraj Sen, Marina Danilevsky, Sanjiv R Das, Seoyoung Kim, Rajasekhar Krishnamurthy, Shivakumar Vaithyanathan "Financial Time-Series Nowcasting with LSTM's and Imperfect Information"', *Under Review SDM-2018*

Adobe Inc., San Jose, CA **Summer 2015**
Algorithms Team headed by Anil Kamath; Mentor: Fangpo Wang
Database algorithms

Miscellaneous

External Reviewer: Transactions on Algorithms (TALG), Networks
Graduate Admissions Comittee: Department of Computer Science, UMD, 2016, 2017
Graduate Executive Council: Secretary 2017
CATS organizer: 2016-2017
Travel Grants: FOCS 2016

Collaborators

Brian Brubach (UMD), Yi-Chin Wu (UMich), John Dickerson (UMD), Navin Goyal (Microsoft Research), Stèphane Lafortune (UMich), Anand Louis (IISc), Kanthi K. Sarpatwar (IBM Research), Prithviraj Sen (IBM Research), Aleksandrs Slivkins (Microsoft Research), Aravind Srinivasan (UMD), Kun-Lung Wu (IBM Research), Pan Xu (UMD)