

# Karthik Abinav Sankararaman

October 2017

Department of Computer Science  
University of Maryland, College Park

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## CONTACT INFORMATION

**Phone:** (+1) 240-715-5910      **Address:** A.V. Williams Building, UMD,  
College Park, MD - 20742  
**Webpage:** [karthikabinavs.xyz](http://karthikabinavs.xyz)      **Email:** [kabinav@cs.umd.edu](mailto:kabinav@cs.umd.edu)

## INTERESTS

Design, Analysis and Applications of Algorithms, Machine Learning, Operations Research

## EDUCATION

### University of Maryland, College Park

PhD. in Computer Science

September 2014 - Present

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)

- 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**, Stéphane 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**, Kanthi K. Sarpatwar, Aravind Srinivasan, Kun-Lung Wu, Pan Xu “Budgeted Online Assignment in Crowdsourcing Markets: Theory and Practice”, *To be submitted WWW-2018*
- **Karthik Abinav Sankararaman**, Alexandrs Slivkins “Combinatorial Semi-Bandits with Knapsacks”, *Under review AISTATS-2018*
- John Dickerson, **Karthik Abinav Sankararaman**, Aravind Srinivasan, Pan Xu “Matching Workers to Tasks in Crowdsourcing Platforms: Two-Sided Online Matching”, *Under review AAAI-2018*
- John Dickerson, **Karthik Abinav Sankararaman**, Aravind Srinivasan, Pan Xu “Allocation Problems in Ride-Sharing Platforms: Online Matching with Offline Reusable Resources”, *Under review AAAI-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	<p><b>Causal Inference</b>  <i>Visitor Indian Institute of Science, Microsoft Research, Bangalore</i>  <i>Joint work with Navin Goyal, Anand Louis</i>            Working on algorithmic problems in theory of causal inference.</p>	May 2017 - Present
	<p><b>Bandit Algorithms and Online Learning</b>  <i>University of Maryland, College Park</i>  <i>Joint work with Alex Slivkins</i>            Working on Bandit algorithms with global budget constraints.</p>	August 2016 - Present
	<p><b>Stochastic Optimization, Economics and Algorithms</b>  <i>University of Maryland, College Park</i>  <i>Joint work with Brian Brubach, Pan Xu, Aravind Srinivasan</i>            Working on multiple problems such as crowdsourcing algorithms, budgeted allocation and matching problems.</p>	August 2014 - Present
	<p><b>Algorithms for Maximum Flow, Graph Sparsification and related problems</b>  <i>Indian Institute of Technology, Madras</i>  <i>Area of Work: Spectral Graph Theory, Convex Optimization</i>  <i>Joint work with Narayanaswamy N.S.</i></p>	Aug 2013 - Aug 2014
	<p><b>Privacy in Location Based Services</b>  <i>University of Michigan, Ann Arbor</i>  <i>Area of Work: Cyber Security</i>  <i>Joint work with Yi-Chin Wu, Stéphane Lafortune</i></p>	May - July 2013
TEACHING EXPERIENCE	<p><b>Teaching Assistant, University of Maryland</b>  <i>CMSC250 - Discrete Structures, CMSC131- Intro to Programming, CMSC451- Design and Analysis of Computer Algorithms</i>  <i>Responsibilities: Conducting Discussion Sessions, Office Hours, Grading Homeworks and Exams</i></p> <p><b>Teaching Assistant, Indian Institute of Technology, Madras</b>  <i>Paradigms of Programming</i>  <i>Responsibilities: Grading Programming Assignments</i></p>	
PROFESSIONAL EXPERIENCE	<p><b>IBM Almaden Research Center, San Jose, CA</b>  <i>Manager: Shivakumar Vaithyanathan, Mentor: Prithviraj Sen</i>  <i>Inter-disciplinary project on Algorithms, Machine Learning and Finance</i>  <b>Karthik Abinav Sankararaman</b>, Prithviraj Sen, Marina Danilevsky, Sanjiv R Das, Seoyoung Kim, Rajasekhar Krishnamurthy, Shivakumar Vaithyanathan “Financial Time-Series Nowcasting with LSTM’s and imperfect information”, <i>Under Review SDM-2018</i></p> <p><b>Adobe Inc., San Jose, CA</b>  <i>Algorithms Team headed by Anil Kamath; Mentor: Fangpo Wang</i>  <i>Database algorithms</i></p>	<p><b>Summer 2016</b></p> <p><b>Summer 2015</b></p>
MISCELLANEOUS	<p><b>External Reviewer:</b> Transactions on Algorithms (TALG), Networks  <b>Graduate Admissions Committee:</b> Department of Computer Science, UMD, 2016, 2017  <b>Graduate Executive Council:</b> Secretary 2017  <b>CATS organizer:</b> 2016-2017  <b>Travel Grants:</b> FOCS 2016</p>	
COLLABORATORS	<p>Brian Brubach (UMD), Yi-Chin Wu (UMich), John Dickerson (UMD), Navin Goyal (Microsoft Research), Stéphane 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)</p>	