Karthik Abinav Sankararaman

Department of Computer Science
University of Maryland, College Park

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Contact Information

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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

Publications (Authors ordered by Alphabetical order)

- Brian Brubach, **Karthik A Sankararaman**, Aravind Srinivasan, Pan Xu "Attenuate Locally, Win Globally: Attenuation-based Frameworks for Online Stochastic Matching with Timeouts", *Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2017*
- 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*
  Journal Version under submission to Mathematics of Operations Research (INFORMS)
- 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, pages 33-38, 2014*

Manuscripts

- **Karthik Abinav Sankararaman**, Alexandrs Slivkins "Semi-Bandits with Knapsacks", *Under Submission, 2017*
- Brian Brubach, **Karthik Abinav Sankararaman**, Aravind Srinivasan, Pan Xu "A Framework to Approximate Column-Sparse Packing Problems", *Under Submission, 2017*

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

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, Randomized Algorithm Design — **August 2014 - Present**
University of Maryland, College Park
Joint work with Brian Brubach, Pan Xu, Aravind Srinivasan
Working on multiple problems in Stochastic Matching and other Stochastic Optimization 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

Revocable Online-Offline Signature Scheme without Bilinear Pairing **January - April 2013**
Indian Institute of Technology, Madras
Area of Work: Cryptography
Joint work with Saikrishna Badrinarayanan, C. Pandu Rangan, Sharmila Devi, Sree Vivek

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**
Mentor: Prithviraj Sen
Inter-disciplinary project in computational economics

Adobe Inc., San Jose, CA **Summer 2015**
Algorithms Team headed by Anil Kamath
Database algorithms

Class Projects

Lower Bounds for Fault Tolerant Facility Placement Problem **Fall 2014**
Class: Algorithmic Lower Bounds
Joint work with Thomas Pensyl, Bartosz Rybicki, Mohammad Taghi Hajiaghayi(Instructor)

Relation between recursive teaching dimension and VC dimension **Fall 2015**
Class: Machine Learning
Joint work with Sina Dehghani, Neal Gupta, Aravind Srinivasan(Instructor)

Community detection in Public-Private Graph models **Fall 2015**
Class: Network Design
Joint work with Brian Brubach, Soheil Ehsani, Mohammad Taghi Hajiaghayi(Instructor)

Miscellaneous

External Reviewer: Transactions on Algorithms(TALG)
Graduate Admissions Comittee: Department of Computer Science, UMD, 2016, 2017
Travel Grants: FOCS 2016

Graduate Coursework

University of Maryland, College Park: Algorithmic Lower Bounds (M.T. Hajiaghayi), Logic and Artificial Intelligence (V.S.), Randomized Algorithms (A.Srinivasan), Statistical Learning for Biology (Z.Khan), Machine Learning (A.Srinivasan), Network Design Algorithms (M.T. Hajiaghayi), Convex Optimization (M.Rotkowitz), Computational Journalism (N.Diakopoulos), Bandit Theory (Guest class by Alex Slivkins)

Indian Institute of Technology, Madras: Complexity Theory (Jayalal Sarma), Approximation Algorithms (Narayanaswamy N.S.), Algorithmic Algebra (Jayalal Sarma), Cryptography (C.Pandu Rangan), Convex Optimization (Krishna Jagannathan), Theory Toolkit (J.Sarma, Narayanaswamy N.S., Ragavendra Rao), Communication Complexity (J.Sarma)