Karthik Abinav Sankararaman

January 2016

Department of Computer Science
University of Maryland, College Park

Contact Information

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Interests

Design, analysis and applications of algorithms, Machine Learning, Optimization, Probability

Education

University of Maryland, College Park **Started September 2014**

PhD. in Computer Science
Advisor: Dr. Aravind Srinivasan

Indian Institute of Technology, Madras **July 2014**

B.Tech Honours in Computer Science and Engineering
Minor: Operations Research
Thesis: Maximum Flow Problem in Undirected Graphs
Advisor: Dr. N.S. Narayanaswamy

Publications

- 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

- Brian Brubach, **Karthik A Sankararaman**, Aravind Srinivasan, Pan Xu "New Algorithms, Better Bounds, and a Novel Model for Online Stochastic Matching", *Under Submission*
- **Karthik Abinav**, Saikrishna Badrinarayanan, C. Pandu Rangan, S. Sharmila Deva Selvi, S. Sree Vivek, Vivek Krishna Pradhan "A Revocable Online-Offline Certificateless Signature Scheme without Pairing", *Cryptology ePrint Archive, Report 2013/758, 2013*

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

Stochastic Optimization, Algorithm Design **August 2014 - Present**

University of Maryland, College Park
Joint work with Brian Brubach, Pan Xu, Aravind Srinivasan
Working on multiple problems such as Matching in Ad-allocation, Stochastic Matching, improving certain concentration bounds, optimization in the context of harnessing solar power

Algorithms for Maximum Flow, Graph Sparsification and related problems **Aug 2013 - Aug 2014**

Indian Institute of Technology, Madras
Area of Work: 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
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

Adobe Inc., San Jose, CA **May-August 2015**
Data Scientist Intern with Algorithms Team in Digital Marketing
Responsibilities: Designed and implemented algorithms for Entity Resolution problem which helped multiple Adobe teams obtain cleaner source of data and reducing human efforts.

HyperVerge Technologies, Chennai **May-July 2014**
Area of Work : Computer Vision, IOS application, PhoneGap
Responsibilities: Developed a mobile application for a pre-startup to help get initial investors and technical mentors onboard

Teritree Technology Pvt. Ltd, Bengaluru **May-July 2012**
Area of Work : Natural Language Processing, Databases
Responsibilities: Designed and implemented a recommendation system for an early stage VC-funded startup

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 Activities

Ball Following robot
Center for Innovation, IIT Madras

Prototype of a 3D Mouse
Finalist *Industrial Defined Problems Challenge, General Electric, 2011*

Service

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

Graduate Coursework

University of Maryland, College Park: Algorithmic Lower Bounds, Logic and Artificial Intelligence, Randomized Algorithms, Statistical Learning for Biology, Machine Learning, Network Design Algorithms, Convex Optimization, Computational Journalism

Indian Institute of Technology, Madras: Complexity Theory, Approximation Algorithms, Algorithmic Algebra, Cryptography, Natural Language Processing, Convex Optimization, Theory Toolkit, Communication Complexity

Programming

C/C++, Java, Python, R, Lisp, Prolog, LaTeX, x86-Assembly