Karthik Abinav Sankararaman

Department of Computer Science
University of Maryland, College Park

Contact Information

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

Interests

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

Education

University of Maryland, College Park **Started September 2014**
College Park, Maryland, USA
Degree: PhD. in Computer Science (**GPA**: 4.0/4.0)
Advisor: Dr. Aravind Srinivasan

Indian Institute of Technology, Madras **July 2014**
Chennai, India
Major: 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

- 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 "Improved algorithms for Online 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 Scholarship. Awarded to the **top 150 candidates** of India.
- 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, improving certain concentration bounds, optimization in the context of harnessing solar power, randomized models for team performance

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 **Sept 2014 -Dec 2014**
Class: Algorithmic Lower Bounds
Joint work with Thomas Pensyl, Bartosz Rybicki, Mohammad Taghi Hajiaghayi(Instructor)

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

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

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

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

Miscellaneous Activities

Ball Following Bot **May-June 2011**
Area of Work : Computer Vision, Microprocessor programming
Center for Innovation, IIT Madras

Prototype of a 3D Mouse **August-September 2011**
Area of Work : Computer Vision
Finalist *Industrial Defined Problems Challenge, General Electric*

Tools

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