ABISHEK SANKARARAMAN

The University of Texas at Austin

Contact Information

1626A, W.6 Street,
Austin, TX 78703
http://abishek90.github.io

Phone: (+1) 5126985191
Email: abishek.90@gmail.com
abishek@utexas.edu

Research Interests

Stochastic Geometry, Randomized Algorithms, Wireless Networks

Education

The University of Texas at Austin **September 2013 -**
PhD in Electrical and Computer Engineering
GPA - 3.94/4.0

Indian Institute of Technology Madras, Chennai **July 2008 - May 2013**
B.Tech in Electrical Engineering
M.Tech in Communications
Minor in Mathematics
CGPA - 9.23 out of 10 (Highest CGPA in Electrical Engineering (Dual Degree))

Publications

1. **A. Sankararaman**, F. Baccelli "CSMA k-SIC - A Class of Distributed MAC Protocols and their Performance Evaluation", Proceedings of *IEEE INFOCOM* 2015,
2. **Abishek.S**, B.Narayanaswamy "Congestion Control of Smart Distribution Grids using State Estimation," In Proceedings of *E6 Workshop,IEEE COMSNETS*, January, 2013

Scholastic Achievements

- Recipient of *DAAD WISE Scholarship* 2011 to pursue research in a German university.
- *All India Rank 805* in IIT JEE 2008 out of 330,000 students
- *Top 1%* among approximately 40,000 candidates in National Level ***Physics Olympiad*** and National Level ***Chemistry Olympiad***, 2007.

Research Projects

Spatial Birth-Death Dynamics **Aug 2014 - present**
Advisor : Prof. François Baccelli

- In this work, we are investigating the following interacting particle problem motivated from ad-hoc wireless networks.
  Links (Tx-Rx pairs) are *born* in continuum space according to some space-time stochastic process. The transmitters have a file of certain size that it wants to communicate to its receiver. The rate of communication is governed by the instantaneous Shannon Rate which depends on the instantaneous interference which in turn depends on the location of other links *alive* at that instant. A link *dies* once it has completed its file transfer.
- We currently have an *exact* characterization of time ergodicity of this birth-death continuum space particle process. We are currently exploring the stability region associated with other forms of information-theoretic schemes employed by the receiver.

Dense Wireless Networks - Distributed Access Algorithms **Aug 2013 - May 2014**
Advisor : Prof. François Baccelli

- The focus of this project was to propose distributed algorithms for Medium Access Control in Dense Wireless Networks. Most protocols in use widely today treat Interference as noise which is not Information Theoretically optimal. The goal, was to propose and develop tools to analyze protocols that employ more suitable schemes such as Joint Decoding or Successive Interference Cancellation (SIC).
- We proposed and evaluated a class of distributed protocols called CSMA k-SIC protocols which in a systematic fashion incorporate SIC on top of existing 802.11 CSMA architectures.
  The results appear in the proceedings of Infocom 2015.

Learning large Sparse Graphs - Sufficient Conditions **Aug 2012 - May 2013**

Advisor: Dr. Radhakrishna Ganti, Department of Electrical Engineering, IIT Madras

- Conducted research on efficient network (graph) reconstruction techniques using aggregated end-to-end measurements (primarily delays) between a subset of nodes in a graph.
- Proved theoretical results on the minimal amount of resources sufficient to guarantee near accurate sparse random graph reconstruction. *(Thesis is available on my web page).*

Industry Experience

Futurewei Technologies Inc, Santa Clara, CA **June-Aug 2015**

Role : Data Scientist

- The goal of the internship was to address the 'churn prediction' problem for a major Chinese mobile service provider. The problem was to predict the most likely customers who may switch to other service providers (or 'churn'), from the data about all the users for the past few months and a labels of which of those churned.
- Developed heuristic algorithms and implemented them on Spark Scala to work at scale on the data.

Skills

- Programming: C, C++, Python, Spark
- Scientific: MATLAB, Scilab