Jithin K. Sreedharan

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Professional Summary

- Computer research scientist with a strong background in statistical modeling, data science, and machine learning, and experience in applying data science techniques to a wide range of domains including computational social science, bioinformatics, and network science.
- Strong applied and theoretical research record leading to 6 journal and 13 international conference/workshop publications in highly-selective top-tier venues including SIGKDD, The Web Conference (WWW), SIGMETRICS, Nature Reports, INFOCOM, etc.
- Orchestrated complex data mining research projects involving various statistical techniques leading to several invited research talks, grant writings, and multiple collaborations.

Employment

National Science Foundation (NSF) Center for Science of Information
Department of Computer Science, Purdue University   West Lafayette, IN, USA
Postdoctoral Researcher   01/2017 – present
Mentors: Prof. Wojciech Szpankowski and Prof. Ananth Grama

- Currently working on graph neural network based algorithms to predict node labels that are associated with the dynamic graph evolution.
- Designed and executed research on recovering temporal information hidden in the dynamic data of social media and biological systems (protein and brain)
- Developed an optimal feature selection algorithm and various approximate solutions for it with reduced time and sample complexity
- Coordinated with a team consisting of three senior professors, three postdoctoral researchers, and instituted research collaboration with an interdisciplinary data science team in quantum computing
- Resulted in publications (2 conferences, 1 journal, 2 in preparation), 4 grant proposals, and 2 open source libraries. Delivered 12 invited research talks (including Google Research and Adobe Research)

INRIA and INRIA-Bell Labs joint lab   Sophia Antipolis and Paris, France
Ph.D. Graduate Researcher, Team MAESTRO (renamed to NEO)   08/2013 – 12/2016
Advisor: Dr. Konstantin Avrachenkov

- Designed and analyzed distributed data mining algorithms for graphs to sample, rank, and estimate graph properties.
- Developed methods based on reinforcement learning, short random walks, extreme value theory, and spectral graph theory for estimation problems on networked data
- Designed distributed implementation of spectral clustering techniques
- Launched collaborations with researchers from Purdue/CMU (USA), Bell Labs, UFRJ (Brazil), IIT Bombay (India), and IISc Bangalore (India)
- Resulted in publications (5 conferences, 3 journals), and 4 open source libraries. Delivered 7 invited research talks

Indian Institute of Science   Bangalore, India
Performance Analysis Lab, Dept. of Electrical Communication Engineering
Research Associate   09/2010 – 04/2013
Advisor: Prof. Vinod Sharma

- Developed and analyzed sequential hypothesis testing algorithms for distributed quickest detection of data anomalies, with various generalizations from parametric to non-parametric setup
- Tested the devised methods in anomaly detection in wireless sensor networks and spectrum sensing in cognitive radios, with aid from Boeing Inc. and Ministry of Communications and Information Technology, Govt. of India

- Resulted in publications (5 conferences, 1 journal), and 2 open source libraries

Robert Bosch   Coimbatore and Bangalore, India
System Engineer, Automotive embedded systems in gasoline engines   08/2007 - 12/2008
- Developed and maintained software for engine control units (ECUs)
- Integrated new device drivers and application software modules into a common platform after rigorous hardware and software testing.

Education

Doctor of Philosophy in Computer Science   08/2013 – 12/2016
INRIA and INRIA-Bell Labs joint lab   Sophia Antipolis, France
Affiliated university: Université Côte d'Azur (Université Nice Sophia Antipolis), France
Thesis title: *Sampling and Inference in Complex Networks*

Master of Science (Engineering), Dept. of Electrical Communication Engg.   09/2009 – 07/2012
Indian Institute of Science (IISc)   Bangalore, India
Thesis title: *Spectrum Sensing in Cognitive Radios using Distributed Sequential Detection*

Bachelor of Technology in Electronics and Communication Engineering   08/2003 – 05/2007
Govt. Model Engineering College - Cochin University of Science and Technology   Cochin, India
Main project title: *FPGA Implementation of a Probabilistic Neural Network*

Some Selected Publications (6 journal and 13 international conference/workshop publications)

1. Revisiting Parameter Estimation in Biological Networks: Influence of Symmetries
   Jithin K. Sreedharan[†], Krzysztof Turowski[†], and Wojciech Szpankowski; [†]*Equal contribution*
   ACM SIGKDD, 2019 (poster presentation); *BioKDD*, 2019 (oral presentation)

2. Inferring Temporal Information from a Snapshot of a Dynamic Network
   Jithin K. Sreedharan[†], Abram Magner[†], Ananth Grama, and Wojciech Szpankowski; [†]*Equal contribution*
   Nature Scientific Reports, 2019 [impact factor: 4.61]

3. TIMES: Temporal Information Maximally Extracted from Structures
   Abram Magner[†], *Jithin K. Sreedharan*[†], Ananth Grama, and Wojciech Szpankowski; [†]*Equal contribution*
   The Web Conference (WWW), 2018 [acceptance rate: **14.8%**; oral presentation]

4. Inference in OSNs via Lightweight Partial Crawls
   Konstantin Avrachenkov, Bruno Ribeiro and *Jithin K. Sreedharan* (primary author, alphabetical list)
   ACM SIGMETRICS/IFIP, 2016 [acceptance rate: **13.5%**; oral presentation]

5. Distributed Spectral Decomposition in Networks by Complex Diffusion and Quantum Random Walk
   Konstantin Avrachenkov, Philippe Jacquet and *Jithin K. Sreedharan* (primary author, alphabetical list)
   IEEE INFOCOM, 2016 [acceptance rate: **18.25%**; oral presentation]

Computational Skills

Languages: Python, C++, Matlab
Machine learning: PyTorch, TensorFlow, Scikit-learn
Data analytics: Numpy, Pandas, Scipy, Matplotlib, Jupyter Notebook, Gurobi Optimizer

Fellowships, Awards, and Honors

- Postdoctoral fellowship from NSF Science and Technology Center for Science of Information
- Postdoctoral fellowship from University of California San Diego Halicioglŭ Data Science Institute (declined)
- ACM SIGMETRICS/PERFORMANCE travel grant 2016
- **Best M.S thesis medal** - Prof. F. M. Mowdawalla medal - Indian Institute of Science, Bangalore, India
- Ph.D. fellowship from INRIA-Bell Labs joint lab for the entire duration of Ph.D.
- Ministry of Human Resources and Development (MHRD), Govt. of India, scholarship for graduate studies