

Sirisha Rambhatla

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PROFESSIONAL SUMMARY Analytical and detail oriented electrical engineer working at the cusp of machine learning, statistical signal processing, and optimization • Passionate about developing tools and algorithms to extract patterns from data in order to solve high-impact real-world problems • Quick at analyzing, modeling, prototyping, and envisioning potential applications • Experience in a wide range of areas, from medical devices, embedded systems, signal processing/machine learning to intellectual property litigation • Exceptional written and verbal communication skills.

EDUCATION **Doctor of Philosophy (Ph.D.)** in Electrical Engineering Aug. 2014 - Present
University of Minnesota–Twin Cities (3.8)
Thesis Topic: Provable Algorithms for Matrix Decompositions & Factorization

Master of Science (M.S.) in Electrical Engineering Aug. 2010 - Dec. 2012
University of Minnesota–Twin Cities (3.7)
Thesis: Semi-Blind Source Separation via Sparse Approximation & Online Dictionary Learning

Bachelor of Technology (B.Tech) in Electronics & Telecom. Engineering Aug. 2006 - May 2010
College of Engineering Roorkee, India (81.4% (Honors)) (*Bronze Medalist*)
Senior Project: Target Tracking via Kalman Filtering

SKILLS Scientific Computing: MATLAB/Simulink (expert) and Mathematica (intermediate).
Programming Languages: Python(intermediate), C (intermediate), and C++(intermediate).
Deep Learning Tools: TensorFlow(beginner), PyTorch(beginner).

EXPERIENCE **Graduate Research Assistant** Feb. 2011 – May 2012 & Aug. 2014 – Present
Dept. of Electrical and Computer Engineering University of Minnesota–Twin Cities
Supervisor: Professor Jarvis Haupt Minneapolis, MN

- Analyze matrix factorization and demixing models.
- Develop provable algorithms for semi-supervised and unsupervised learning tasks arising in matrix demixing tasks using convex and non-convex formulations.
- Analyze the algorithms, both empirically and theoretically, using tools from statistical signal processing and optimization.
- Analyze the performance of the developed factorization and demixing techniques on real-world applications.
- Develop a novel technique to build topological maps from Lidar data using tensor decompositions.
- Learn and mentor our research group on utilizing the supercomputing resources at the university (submitting jobs, parallelizing code, retrieving data) in order to significantly aid various computational tasks in the group.

Science Advisor Mar. 2013 – Jun. 2014
Intellectual Property and Technology Litigation Robins, Kaplan, Miller & Ciresi LLP
Supervisor: Shelley Gilliss, Ph.D. Minneapolis, MN

- Strategize for various technical issues involved in technology licensing and Intellectual Property (IP) litigation.
- Analyze potential IP cases to evaluate their validity and scope.

- Perform infringement analysis, including source code inspection (Android, iOS, JAVA, C++, C and Objective-C code).
- Design experiments to identify infringement. In a particular instance, developed an experiment on-the-fly in a client facing meeting to save upwards of \$100,000 in chip tear-down costs, and also the time to prove infringement.
- Communicate technical insights with people with non-technical backgrounds both inside and outside the firm.

Engineering Intern (R&D)

Technology and Engineering Division
Supervisor: Tzu-Yu Wang, Ph.D.

Jun.– Aug. 2011 & Jun.– Oct. 2012
Ativa Medical Inc.
St. Paul, MN

- Develop signal & data processing tools for flow-cytometric time-series data.
- Analyze, evaluate and identify potential issues with the product being developed.
- Help develop a new imaging based blood diagnostics product.
- Design a wavelet based focus-stacking algorithm to improve quality of images from the imaging systems.

Undergraduate Research Intern

Networked Control Systems Lab
Supervisor: Professor Ramprasad Potluri

May 2009 – Jul. 2009
Indian Institute of Technology Kanpur
Kanpur, India

- Develop a dsPIC based Networked Embedded Test-bed for an all-wheel drive, all-wheel steer prototype lunar rover.
- Design, test and document the distributed control algorithms on the test-bed for control of D.C. motors to facilitate its use for an undergraduate course at the institute

SELECTED PUBLICATIONS [1] **S. Rambhatla**, N. D. Sidiropoulos and J. Haupt. TENSORMAP: Lidar-based Topological Map and Localization via Tensor Decompositions., 2018 (*Under Review*).

[2] **S. Rambhatla**, X. Li, and J. Haupt. Target Based Hyperspectral Demixing via Generalized Robust PCA. *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, 2017. **Student Best Paper Award Finalist**

[3] **S. Rambhatla**, X. Li, and J. Haupt. A Dictionary Based Generalization of Robust PCA. *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, 2016. **National Science Foundation (NSF) Travel Award**

[4] **S. Rambhatla** and J. Haupt. Semi-Blind Source Separation via Sparse Representations and Online Dictionary Learning. *Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, 2013.

SELECTED TALKS • “Provably Recovering Patterns from Data: Matrix to Tensors.” Nov. 2017
— Yahoo! Research, San Jose, CA.
• “Dictionary based Generalization of Robust PCA.” Dec. 2016
— GlobalSIP 2016, Washington D.C.

SELECTED AWARDS AND HONORS E. Bruce Lee Memorial Fellowship, University of Minnesota–Twin Cities, 2014
SciTechsperience Fellowship, Minnesota High Tech Association, 2012
Proficiency Award for Academic Excellence, COER, India, Session 2009-10 & 2006-07

SELECTED COURSEWORK Machine Learning, Probability and Stochastic Processes, Optimization Theory, Tensor Decompositions, Detection and Estimation, Collaborative and Social Computing, Introduction to Nonlinear Optimization, and Image Processing and Applications.

PROFESSIONAL MEMBERSHIPS IEEE Student Member, since 2013
Member, Eta Kappa Nu (HKN), since 2011