Sirisha Rambhatla

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Experience

Dept. of Electrical and Computer Eng., University of Minnesota **Minneapolis, MN**
Research Assistant, Advisor: Prof. Jarvis Haupt, Ph.D *2014–present, 2011–12*

Research in area of statistical signal processing and machine learning.

Robins Kaplan L.L.P. **Minneapolis, MN**
Science Advisor *March 2013- July 2014*

Assist attorneys in strategizing for various technical issues involved in Technology Licensing and Intellectual Property (IP) Litigation.

Ativa Medical Inc. **St. Paul, MN**
Engineering Intern (R&D) *Jun–Oct 2012 and Jun–Aug 2011*

Develop signal and data processing tools for flow-cytometric time-series data to analyze the performance of blood diagnostics product.

Education

University of Minnesota-Twin Cities **Minneapolis, MN**
Ph.D. Student (Electrical Engineering), ***3.8*** *Sep 2014-present*

Relevant Coursework: Tensor Decompositions, Machine Learning, Adaptive Digital Signal Processing, Optimization Theory, Detection and Estimation, Collaborative and Social Computing

Awards/Honors: E. Bruce Lee Memorial Fellowship for Academic Year 2014-15.
National Science Foundation (NSF) Travel Award
(IEEE Global Conference on Signal and Information Processing, 2016).
Finalist, Student Best Paper Award
(Asilomar Conference on Signal, Systems, and Computers, 2017).

University of Minnesota-Twin Cities **Minneapolis, MN**
M.S. Electrical Engineering, ***3.7*** *Dec 2012*

Relevant Coursework: Introduction to Nonlinear Optimization, Multirate and Multiscale Signal Processing, Image Processing and Applications, Robust Control System Design, Robotics, Linear Systems and Optimal Control, Probability and Stochastic Processes.

Awards/Honors: Selected for the SciTechsperience internship program organized by Minnesota High Tech Association (MHTA).

College of Engineering Roorkee **Roorkee, India**
B.Tech (Hons.), Electronics and Telecommunication Engineering, ***81.4%*** *May 2010*

Awards/Honors: Placed third in the merit list.
Proficiency Award for Academic Excellence for session 2009-2010.
Proficiency Award for Academic Excellence for session 2006-2007.

Master's Thesis

Title: **Semi-Blind Source Separation via Sparse Approximation and Online Dictionary Learning**

Advisor: Prof. Jarvis Haupt Ph.D., Dept. of Electrical and Computer Eng., University of Minnesota-Twin Cities, Minneapolis, MN

Description: Analyze the single channel semi-blind source separation problem with applications to electro-shock law enforcement devices, image and video data analysis.

Skills

Scientific Computing: MATLAB/Simulink and Mathematica.
Programming Languages: C (Intermediate), C++(Intermediate), and Python(Intermediate).
Embedded programming: dsPIC, ATMEGA16/32, MPLAB, and Eclipse IDE.

Relevant Projects

TensorMap: Lidar based Topological Map and Localization via Tensor Decompositions
Tensor Decompositions Course Project *May 2016*
Develop a Tucker-3 decomposition based technique to learn topological maps for LIDAR data which compresses the map about 8300 times as compared to the full LIDAR scan.

Error in Variables Model for Calibration of Echo Planar Imaging (MRI)
Optimization Theory Course Project *May 2015*
Develop a technique to counter the calibration problem encountered in echo planar imaging by using the errors in variables model, posing the problem as an elastic net.

Geometric Wavelets : Concepts & Applications
Multirate and Multiscale Signal Processing Course Group Project *May 2012*
Implement and compare the performance of Geometric Wavelets for applications in image denoising, inpainting and classification with other state-of-the-art techniques.

Blind Compressed Sensing with Global Measurements
Nonlinear Optimization Course Project *Dec 2011*
Develop a novel formulation for the Blind Compressed Sensing setting (sparse basis unknown both in sampling and reconstruction stages) for sparse signal reconstruction with global samples.

Technical Service

- Reviewer, Signal Processing Letters (SPL), 2017
- Reviewer, SIAM Journal of Imaging Sciences, 2017
- Reviewer, IEEE Transactions on Industrial Informatics (T-II) 2017
- Reviewer, IEEE Transactions on Signal Processing (T-SP) 2016
- Reviewer, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2016
- Reviewer, International Conference on Artificial Intelligence and Statistics (AISTATS) 2016
- Reviewer, IEEE Transactions on Signal Processing (T-SP) 2015
- Reviewer, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2015
- Reviewer, IEEE Transactions on Signal Processing (T-SP) 2014

Talks

- "Provably Recovering Patterns from Data: Matrix to Tensors", Yahoo!, November 2017

Workshops

'Sparsity and Computation" organized by Institute of Advanced Study, Princeton, NJ, May 2011.

Publications

[1] S. Rambhatla and J.Haupt. Semi-Blind Source Separation via Sparse Representations and Online Dictionary Learning. *In Proceedings of the 47th Asilomar Conference on Signals Systems and Computers*, 2013.

[2] S. Rambhatla, X. Li, and J. Haupt. A dictionary based generalization of robust PCA. In *2016 IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, pages 1315–1319, Dec 2016.

[3] S. Rambhatla, X. Li, and J. Haupt. Target-based hyperspectral demixing via generalized robust PCA. In *Asilomar Conference on Signals Systems and Computers.*, 2017.

[4] S. Rambhatla, D. Xiao, J. Haupt, and N. Sidiropoulos. Exact recovery of multiple sparse CPD/PARAFAC factors of a tensor via dictionary learning. In *Asilomar Conference on Signals Systems and Computers.*, 2017.

[5] S. Rambhatla and J. Haupt. Provable matrix completion under sparse factor model. *In preparation*, 2017.

[6] S. Rambhatla, X. Li, and J. Haupt. A dictionary based generalization of robust pca with applications. *Journal in preparation*, 2017.