RAKSHITH SHARMA SRINIVASA
Senior Researcher, Machine learning
Samsung Research America
Mountain View, CA

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RESEARCH INTERESTS

Machine learning (ML), Artificial intelligence (AI) , Natural language processing (NLP), signal processing, algorithms, mathematical optimization, machine learning for healthcare, algorithmic fairness

EDUCATION

Ph.D in Electrical and Computer Engineering Aug 2015 - December 2020
Georgia Institute of Technology, Atlanta, GA GPA:3.93/4.0
Advisor: Dr. Justin Romberg
Thesis: Sketching for inference in high dimensions
Outstanding Research Award (Center for Signal and Image Processing, Georgia Tech)
ITA graduation day award, 2020

M.S in Electrical and Computer Engineering Aug 2014 - December 2020
Georgia Institute of Technology, Atlanta, GA GPA:4.0/4.0

B.Tech in Electronics and Communication Engineering July 2010 - May 2014
National Institute of Technology Karnataka, Surathkal, India GPA:9.36/10.0

EXPERIENCE

Senior machine learning researcher, Samsung Research America (SRA) Dec 2021 – Present
Mountain View, CA

- Developing state-large foundational models for multimodal data
- Research on fundamental problems in machine learning and signal processing
- Developing ML-based solutions for Samsung's consumer electronics division

Senior Machine learning research scientist - IQVIA Jan 2021 – Nov 2021
Cambridge, MA

- Developed ML solutions for clinical trial operations, health condition prediction and rare disease prediction
- Research on recommendation, ranking and fairness problems using NLP and machine learning
- Analyze large multi-modal datasets using SQL and Pyspark

Machine Learning Research Intern – IQVIA Jan 2020 – May 2020
Cambridge, MA

- Developed a deep learning based method to improve computational efficiency of graph neural networks
- Method to apply graph neural networks to model the spread of the COVID-19 with real world hospital data

Research intern – Mitsubishi Electric Research Labs (MERL) May 2017 – Aug 2017
Cambridge, MA

- Designed optimization algorithms for multimodal active sensing using antenna arrays

Application support engineering intern – MathWorks May 2015 – Aug 2015
Natick, MA

- Developed software in C++ and documentation for the signal processing toolbox
- Contributed to the R2016a release of MATLAB.

PUBLICATIONS

- **R.S**, J. Cho, C. Yang, Y.M. Saidutta, C. Lee, Y. Shen, H. Jin, 'CWCL: Cross-Modal Transfer with Continuously Weighted Contrastive Loss', **NeurIPS 2023**, New Orleans, Louisiana, December 2023
- **R.S**, S. Kim, K. Lee, 'Recovering sketched low-rank matrices with a shared factor by convex programming', **IEEE Journal on Special Areas in Information Theory (Special Issue: Sensing: Fundamental Limits and Modern Applications)**, 2023
- C. Delude, **R.S**, S. Karnik, C. Hood, M. Davenport, J. Romberg, 'Iterative broadband source localization', **IEEE Journal on Special Areas in Information Theory (Special Issue: Sensing: Fundamental Limits and Modern Applications)**, 2023
- C. Yang, Y.M. Saidutta, **R.S.**, C. Lee, Y. Shen, H. Jin, 'Robust Keyword Spotting for Noisy Environments by Leveraging Speech Enhancement and Speech Presence Probability', **INTERSPEECH Conference**, Dublin, Ireland, August 2023

- **R.S***, Y.M. Saidutta*, C. Lee, C. Yang, Y. Shen, H. Jin, 'To wake-up or not to wake-up: reducing keyword false alarm by successive refinement', **International Conference on Acoustics, Speech and Signal Processing**, Rhodes Island, Greece, June 2023 (* - equal contribution)
- K. Lee, **R.S**, M. Junge, J. Romberg, 'Approximately low-rank recovery from noisy and local measurements by convex program', **Information and Inference: a journal of Institute of Mathematics and its Applications** (IMA), 2023
- **R.S**, C. Qian, B. Theodorou, J. Spaeder, C. Xiao, L.Glass, J. Sun, 'Clinical trial site matching with improved diversity using fair policy learning', **Preprint**, https://arxiv.org/abs/2204.06501
- J. Gao, **R.S**, C. Qian, L. Glass, J. Spaeder, J. Romberg, J. Sun, C. Xiao, 'STAN: Spatio-Temporal Attention Network for Pandemic Prediction Using Real World Evidence', **Journal of the American Medical Informatics Association** (JAMIA), November 2020
- **R.S**, C. Xiao, L. Glass, J. Romberg, J. Sun, 'FastGAT: Fast Graph Attention Networks Using Effective Resistance Based Graph Sparsification', **Preprint**, https://arxiv.org/abs/2006.08796
- **R.S**, K.Lee, J. Romberg, M. Junge, 'Tensor-norm-based convex program and performance guarantee for subspace-constrained blind deconvolution', **Invited paper, Asilomar conference on Signals, Systems, and Computers**, November 2020
- **R.S**, M. Davenport, J. Romberg, 'Sample complexity bounds for localized sketching' **AISTATS**, August 2020 , `https://arxiv.org/abs/2003.09097`
- **R.S**, M. Davenport, J. Romberg, 'Trading beams for bandwidth: imaging with randomized beamforming' **SIAM Journal on Imaging Sciences, 13:1, 317-350**, 2020, `https://doi.org/10.1137/19M1242045`
- **R.S**, K. Lee, M. Junge, J. Romberg, 'Decentralized sketching of low rank matrices' **Neural Information processing systems (NeurIPS)** , Vancouver, Canada, December 2019, `https://papers.nips.cc/paper/9200-decentralized-sketching-of-low-rank-matrices`
- K.Lee, **R.S**, M. Junge, J. Romberg, 'Entropy Estimates on Tensor Products of Banach Spaces and Applications to Low-Rank Recovery', **Sampling Theory and Applications (SampTA)**, Bordeaux, France, 2019, `https://sampta2019.sciencesconf.org/267368/document`
- **R.S**, M. Davenport, J. Romberg, 'Localized sketching with applications to coherent array imaging', **Allerton conference on Communication, Control and Computing** , Allerton, IL, October 2018, `https://ieeexplore.ieee.org/document/8635868`

PATENTS

- "Speech denoising networks using speech and noise modeling", Inventors: C. Yang, C. Lee, **R.S. Srinivasa**, Y.M. Saidutta, Y. Shen, H. Jin, Application submitted: November 2022
- "Low dimensional encoding broadband beamformer with reduced hardware arrays", Inventors: C. Delude, J. Romberg, M. Davenport, S. Karnik, **R.S. Srinivasa**, Publication date: September 2022
- "System and Method for Multimodal, Motion-Aware Radar Imaging", Inventors: Jeroen Van Baar, Petros T Boufounos, Hassan Mansour, **R.S. Srinivasa**, Issue date: September 2020

TALKS

- "Localized Sketching for matrix multiplication and regression", LightOn (Paris) summer seminar series, June 2020
- "Subspace learning and embedding with localized sketching" - Graduation day presentation, Workshop on Information theory and applications (ITA), San Diego, february 2020
- "Localized matrix sketching with applications to active array imaging", Spectrum Lab, Indian Institute of Science, Bangalore, India, Ferurary 2019

TECHNICAL SKILLS

- Python, MATLAB, SQL, PySpark, PyTorch
- Linux, macOS, Git, LaTeX

SERVICE, TEACHING EXPERIENCE

- Area Chair, AISTATS 2023, 2024
- Review Editor, Frontiers in Signal Processing
- Reviewer, NeurIPS, ICLR, ICML
- Reviewer, Transactions on Signal Processing , Transactions on Information Theory
- Session Chair, Allerton Conference, 2018
- Teaching Assistant, **Math foundations of Machine learning**, fall 2017
- Teaching Assistant, **Statistical machine learning**, Spring 2015

ADVANCED COURSEWORK

Real Analysis, Statistical Machine learning, Advanced computer vision
Numerical linear algebra, Convex optimization, High dimensional statistics
Advanced digital signal processing, Introduction to compressive sensing

WORKSHOPS

- Information theory and applications(ITA), SanDiego, February 2020
- Signal Processing with Adaptive Sparse Structured Representations(SPARS), Toulouse, June 2019
- Fundamentals of Data Analysis, University of Wisconsin-Madison, July 2018
- Randomized Numerical Linear Algebra and Applications, Simons Institute for the Theory of Computing, Berkeley, CA, September 2018