Suriya Gunasekar

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Education

MS–PhD 2010–Present	**The University of Texas at Austin**, *USA*, **Advised by: Prof. Joydeep Ghosh**, Department of Electrical and Computer Engineering. ○ PhD, ECE 2012–Present (Expected graduation: Spring 2016), ○ MS, ECE 2010–2012.	CGPA: 3.95/4.00.
B. Tech 2006–2010	**National Institute of Technology, Warangal**, India, Department of Electronics and Communication Engineering.	CGPA: 9.13/10.00.

PhD Thesis

Dissertation *Generalizations of Matrix Estimation: Statistically Consistent Estimators and Applications.* My dissertation focuses on theoretical analysis and applications of important generalizations of standard matrix completion. This includes estimators for matrix completion under heterogeneous datatypes, generalized noise models, generalized structural constraints, and certain non–traditional recovery criteria. The thesis is motivated by applications in preference estimation and healthcare analytics, including recommender systems, learning to rank (LETOR), and predictive analysis of patient electronic health records (EHRs).

Research Topics Statistical machine learning, high dimensional estimation, matrix completion, clinical healthcare analytics, learning to rank (LETOR) in high dimensions, convex optimization, interpretable latent space models, non–negative matrix factorization, recommender systems.

Select Courses Data Mining, Advanced Topics in Data Mining, Large Scale Machine Learning, Natural Language Processing, Convex Analysis and Optimization, Probability and Stochastic Process.

Publications

2015 Unified View of Matrix Completion under General Structural Constraints. **S. Gunasekar**, A. Banerjee, J. Ghosh. *In Advances in Neural Information Processing Systems 28 (NIPS 2015).*

2015 Consistent Collective Matrix Completion under Joint Low Rank Structure. **S. Gunasekar**, M. Yamada, D. Yin, Y. Chang. *In 18th International Conference on Artificial Intelligence and Statistics (AISTATS 2015).*

2014 Face Detection on Distorted Images Augmented by Perceptual Quality-Aware Features **S. Gunasekar**, J. Ghosh, A. C. Bovik. *In IEEE Transactions on Information Forensics and Security, 2014.*

2014 Face Detection on Distorted Images using Perceptual Quality-Aware Features **S. Gunasekar**, J. Ghosh, A. C. Bovik. *In IS&T/SPIE Electronic Imaging Conference, 2014.*

2014 Exponential family matrix completion under structural constraints. **S. Gunasekar**, P. Ravikumar, J. Ghosh. *In 31st International Conference on Machine Learning (ICML 2014).*

2013 Noisy Matrix Completion Using Alternating Minimization. **S. Gunasekar**, A. Acharya, N. Gaur, J. Ghosh. *In Machine Learning and Knowledge Discovery in Databases (ECML/PKDD 2013).*

2012 Review quality aware collaborative filtering. S. Raghavan*, **S. Gunasekar***, J. Ghosh. *In 6th ACM Conference on Recommender Systems (RecSys 2012).*

*Authors contributed equally.

Preprints (Under Review)

2015 Personalized Diversified Tensor Factorization for Phenotyping. J. Henderson, J. Ho, J. Ghosh, **S. Gunasekar**, J. Sun. *Short version in NIPS 2015 Workshop on Machine Learning in Healthcare.*

2015	Phenotyping using Structured Collective Matrix Factorization of Multi–source EHR Data. **S. Gunasekar**, J. Ho, J. Ghosh, S. Kreml, A. N. Kho, J. C. Denny, B. A. Malin, J. Sun.

Theses

Master's Report	A survey on using side information in recommendation systems. Advised by Prof. Joydeep Ghosh. *In UT Electronic Theses and Dissertations, 2012.*
Bachelor's Thesis	Design of fractal antenna arrays for specified radiation patterns using Genetic Algorithms Advised by Prof. NVSN Sharma. *National Institute of Technology, Warangal, 2010.*

Experience

Research

2012–Present	**The University of Texas Austin**, *USA*, Graduate Research Assistant. Worked on sub–problems within multiple NSF funded projects. Supervisors: Dr. Joydeep Ghosh and Dr. Alan C. Bovik

- Listwise ranking in high dimensions using retargeting of implicit/explicit responses.
- Interpretable phenotype extraction from patient electronic health records, and applications in predictive healthcare analytics.
- Estimators for various generalizations of matrix completion with applications to preference prediction.
- Robust face detection models using image quality indicative features.
- Simultaneous Decomposition and Prediction (SDaP) models for applications in recommender systems.

Teaching

Fall '10, '11, Sp. '11, '13	**The University of Texas Austin**, *USA*, Teaching Assistant. Courses: Data Mining (Dr. Joydeep Ghosh), Digital Logic Design (Dr. Adnan Aziz, Dr. Lizy John).

Industry

Summer '14	**Yahoo Labs, Sunnyvale**, *USA*, Research Intern. Designed a statistically consistent convex estimator and scalable approximate algorithm for collective matrix completion under joint low–rank assumptions. Theoretical analysis derives the first non–trivial sample complexity results for collective matrix factorization. A prototype of the algorithm was developed and evaluated on real–time news recommendation dataset from Yahoo! Japan.
Summer '12	**SRI Labs, Princeton**, *USA*, Research Intern. Developed a personalized photo recommender system that systematically combines information from both image content as well as user feedback. Proposed model further renders an inherent clustering of images that were observed to be semantically coherent. The system was evaluated on a real–world dataset curated from Flickr.
Summer '11	**Apple Inc., Cupertino**, *USA*, Software Intern. Worked with a hardware–testing team on establishing data collection set up using SQL and developing prototypes for preliminary data analysis.

Programming Skills

Python, R, Matlab, pySpark, SQL, Java, C/C++.

Academic Service

Reviewer: Journal of Neurocomputing, Transactions on Knowledge and Data Engineering

PC Member: ACM IKDD Conference on Data Science (CoDS 2016), International Joint Conferences on Artificial Intelligence (IJCAI 2015)

References

Please e–mail for details.