# Suriya Gunasekar

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## Education

MS–PhD* 2010–Present
**The University of Texas at Austin**, *USA*, CGPA: 3.95/4.00.
**Advised by: Prof. Joydeep Ghosh**,
Department of Electrical and Computer Engineering.
- PhD, ECE 2012–2016* (Expected graduation: Spring 2016),
- MS, ECE 2010–2012.

B. Tech 2006–2010
**National Institute of Technology, Warangal**, India, CGPA: 9.13/10.00.
Department of Electronics and Communication Engineering.

## PhD Thesis

Dissertation
*Generalizations of Matrix Estimation: Statistically Consistent Estimators and Applications.*
Matrix formatted data with potential missing entries is often encountered in many domains of predictive and exploratory data analysis. My thesis is motivated by significant applications in preference estimation including recommender systems and ranking, and healthcare analytics using patient electronic health records (EHRs). I have theoretically investigated important generalizations of standard matrix completion setting including estimators for matrix completion under heterogeneous datatypes, heterogeneous noise models, generalized structural constraints.

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.

Coursework (UT Austin)
- **Depth courses**: Data Mining, Natural Language Processing, Advanced Topics in Data Mining, Sparsity Structure and Algorithms, Large Scale Machine Learning.
- **Theory courses**: Convex Analysis and Optimization, Probability Theory and Stochastic Process, Real Analysis, Numerical Linear Algebra.
- **Diversity courses**: Digital Signal Processing, Information Theory

## 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
- Working on listwise ranking in high dimensions using retargeting of implicit/explicit responses.
- Working on interpretable phenotype extraction from patient electronic health records, and applications in predictive healthcare analytics.
- Developed and statistically analysed estimators for various generalizations of matrix completion with applications to preference prediction.
- Designed robust face detection models using image quality indicative features.

### Teaching

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

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### Industry

Summer '14 **Yahoo Labs, Sunnyvale**, *USA*, Research Intern.
Developed a statistically consistent convex estimator and scalable approximate algorithm for collective matrix completion and evaluated a prorotype application on a news recommendation dataset.

Summer '12 **SRI Labs, Princeton**, *USA*, Research Intern.
Designed models for semantic clustering of images with applications to aesthetic quality estimation and personalized photo recommender system. Models were evaluated on a dataset curated from Flickr.

Summer '11 **Apple Inc., Cupertino**, *USA*, Software Intern.
Worked on establishing data collection and preliminary analysis setup for hardware–test data analytics.

## Skills

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

## Publications

### Preprints

Healthcare Analytics *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.

### Published

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

ML Theory *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).

Image Quality *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.

Image Quality *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.

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

ML Theory *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).

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

Recommender Systems *A survey on using side information in recommendation systems.*
**S. Gunasekar**. In UT Electronic Theses and Dissertations.

## References

Please e–mail for details.

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