

**Rajiv Ashu Khanna**  
(Post-MS) Graduate Research Assistant, UT Austin  
**Publications**

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- *Sparse Submodular Probabilistic PCA*. Rajiv Khanna, Joydeep Ghosh, Russell A. Poldrack, Oluwasanmi O. Koyejo **AISTATS 2015 (Oral)**
- *On Prior Distributions and Approximate Inference for Structured Variables*. Oluwasanmi O. Koyejo, Rajiv Khanna, Joydeep Ghosh, Russell A. Poldrack **NIPS 2014**: 676-684
- *Parallel Matrix Factorization for Binary Response*. Rajiv Khanna, Deepak Agarwal, Liang Zhang and Beechung Chen. **IEEE BigData 2013**
- *Estimating Rates of Rare Events with Multiple Hierarchies through Scalable Log-linear Models*. Deepak Agarwal; Rahul Agrawal ; Rajiv Khanna; Nagaraj Kota. **SIGKDD 2010**
- *Translating Relevance Scores to Probabilities for Contextual Advertising*. Deepak Agarwal; Evgeniy Gabrilovich; Rob Hall; Vanja Josifovski; Rajiv Khanna. **CIKM 2009**
- *Structured Learning for Non-Smooth Ranking Losses*. Soumen Chakrabarti, Rajiv Khanna, Uma Sawant, Chiru Bhattacharyya. **SIGKDD 2008**

#### **Professional Experience**

##### **UT Austin (Fall 2012 - present)**

- (Ongoing) Constrained Bayesian inference – We explore formulation of sampling techniques that guarantee low rank samples
- (Ongoing) Transductive learning using Monotone Retargeting – Monotone Retargeting is newly proposed paradigm that solves a convex optimization to fit a monotone transformation for relevance scores (rather than an exact fit), since any monotone transformation would preserve ranking
- State space modeling for Direct Marketing – We build statistical models based on user demographics and past buying behavior to predict buying propensity

##### **Microsoft Research (Summer 2014)**

- Word Embeddings: Worked on a text mining problem that involves representation of words as vectors which can then be used in various ways such as features for a prediction problem.

##### **LinkedIn Inc. (Summer 2013)**

- Online features for contextual advertising – Explored inclusion of online features within limitations of the existing Ad serving infrastructure. Proposals showed lifts, slated for bucket testing.

##### **Research Engineer at Yahoo! Labs Bangalore ( July 2008-July 2012)**

- Web scale recommendation systems – Part of team that developed and tested matrix factorization based recommendation systems on real world data of the order of ~1 billion events using map-reduce. The models were tested over real-world data and gave significant lifts in Click-Through Rates (CTR) when compared to the other state-of-the-art methods.

- Modeling skewed data – Implemented models that address the challenges of modeling CTR and CTR-derived goals. These problems are difficult because of the scale, low CTR, non-trivial derived goals and object hierarchies.
- Information corroboration – Given data extracted from different web sources having potentially conflicting information, we developed graph-transduction algorithms to filter the “most likely correct” info. The methods we developed passed production-level quality tests and as a part of an extraction pipeline enriched content information for entities in the order of hundreds of thousands.

### **IIT Bombay**

- Learning to rank for non-smooth ranking losses (MTech thesis; Guide: Prof Soumen Chakrabarti): Our objective is to learn a real-valued ranking function from the given labeled training data. Using structured learning paradigm, we directly optimize for non-smooth ranking losses like Mean Reciprocal Rank (MRR) and Normalized Discounted Cumulative Gain (NDCG) etc.
- Uncertainty in databases (MTech Seminar)

### **Relevant Course Work**

- (*UT Austin*) Probability and Stochastic Processes, Large Scale Learning, Statistical Modeling II, Optimization in Engg Systems, Large Scale Optimization (Audit), Randomized Algorithms (Audit), (planned Spring 2014) Game Theory
- (*IIT Bombay*) Statistical Foundations of Machine Learning, Web Mining and Extraction, Artificial Intelligence, Probabilistic Graphical Models, Algorithms & Complexity, Object Oriented Programming, Convex Optimization(Audit).

### **Technical Skills**

- R, Matlab, Perl, Python, Shell scripting, C, Java, Hadoop, Pig.

### **Academics**

Degree	University	Year	CPI/%
PhD	UT Austin	2012-	4.0/4.0
M.Tech (Masters)	IIT Bombay	2006-2008	9.78/10
B.Tech (undergrad)	NIT Jalandhar	2002-2006	82.34/100

### **Achievements/Awards:**

- Travel Award (NIPS 2014)
- One of the two students (out of 85) awarded the Phillips Scholarship, on basis of academic performance at Department of CSE, IIT Bombay.
- Rank 1 amongst 55 CS MTech students at IIT Bombay throughout the course, awarded “most outstanding student” of outgoing 2008 Masters batch. Top-5 in undergrad.
- Ranked 97 in GATE (CS) in 2006 out of over 22000 students
- Ranked 452 (stage 1) and 4292 (stage 2) in IIT-JEE undergrad entrance 2002 (forgone admission in favor of studying computer science).
- Test scores GRE (Nov 2012) – 330/340, TOEFL (Nov 2012) – 117/120