

# Ankan Saha

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## Research Interests

Machine Learning, Optimization, Information Retrieval, Computational Geometry

## Education

PhD, Computer Science      September 2007 - Present  
University of Chicago      Advisor: Prof. John Lafferty  
Thesis Title: Optimization Methods in Machine Learning: Theory and Applications

Master of Science, Computer Science      September 2007- June 2010  
University of Chicago      Advisor: Prof. Partha Niyogi  
Thesis title: Topics in Structured Prediction: Problems and Approaches

Bachelor of Technology, Computer Science      August 2003- May 2007  
IIT Kanpur CGPA: 9.0/10.0 (3.6/4.0)      Advisor: Prof. Harish Karnick  
Thesis Title: Kernel Learning & Classification using SVM: A Comparative Study

## Work Experience

- **Microsoft Research Redmond** (June- September 2012)  
*Temporal Behavior of Repeats in Query Logs*  
with Asela Gunawardena
- **Microsoft Research Bangalore** (June- September 2011)  
*Various aspects of Online Learning*  
with Prateek Jain
- **IBM Research Yorktown** (June- September 2010)  
*Multi-task Learning with new regularization schemes*  
with Kush Varshney and Aleksandra Mojsilovic
- **MPI Tubingen Germany** (June-September 2008)  
*Duality between Maximum Likelihood and Maximum Entropy for Multiclass loss functions*  
with Yasemin Altun
- **Statistical Machine Learning Group, NICTA Australia** (May-July 2007)  
*Feature Extraction and Training of the CRF loss function for a modular Optimization Solver*  
with Wray Buntine and S.V.N. Vishwanathan

## Publications

### Journals:

- *Smoothing Multivariate Performance Measures*  
with Xinhua Zhang and S.V.N. Vishwanathan  
Journal of Machine Learning Research (JMLR) (Accepted), 2012
- *Accelerated Training of Max-Margin Markov Networks with Kernels*  
with Xinhua Zhang and S.V.N. Vishwanathan  
Journal of Theoretical Computer Science(TCS) (Accepted with Minor Revisions), 2012
- *On the Finite time Convergence of Cyclic Coordinate Descent Methods*  
with Ambuj Tewari  
SIAM Journal of Optimizaton, 2012

## Conferences:

- *Learning Evolving and Emerging Topics in Social Media: A Dynamic NMF approach with Temporal Regularization*  
with Vikas Sindhwani  
In the proceedings of WSDM 2012
- *Accelerated Training of Max-Margin Markov Networks with Kernels*  
with Xinhua Zhang and S.V.N. Vishwanathan  
In the proceedings of ALT 2011
- *Smoothing Multivariate Performance Measures*  
with Xinhua Zhang and S.V.N. Vishwanathan  
In the proceedings of UAI 2011
- *Newer rates for Bandit Online Convex Optimization*  
with Ambuj Tewari (University of Texas, Austin)  
In the proceedings of AISTATS 2011
- *Lower Bounds on Rate of Convergence of Cutting Plane Methods*  
with Xinhua Zhang (University of Alberta) and S.V.N. Vishwanathan (Purdue University)  
In the proceedings of NIPS 2010
- *New Approximation Algorithms for Minimum Enclosing Convex Shapes*  
with S.V.N. Vishwanathan and Xinhua Zhang  
In SODA 2011
- *Topic Evolution and Emergence in Social Media using dynamic dictionary learning*  
with Vikas Sindhwani, IBM TJ Watson  
In NIPS 2010 workshop, Machine Learning for Social Computing

## Preprints

- *The interplay between Stability and Regret in Online Learning*  
with Prateek Jain and Ambuj Tewari

## Masters Thesis

- *Algorithms for Semi-Supervised Structured Prediction of Data*  
with Partha Niyogi, University of Chicago

## Academic Honors

- Recipient of the Outstanding Graduate Student Fellowship, Department of Computer Science, University of Chicago, 2011.
- Received Academic Excellence award from IIT Kanpur for the year 2003-2004.
- Sole recipient of the prestigious Aditya Birla Scholarship for "The Leaders of Tomorrow" in the year of 2003 from IIT Kanpur (This award is given to only 10 Science and Engineering Students in India every year.)
- National Talent Search Scholar (NTSE) in the year 2001.
- Secured 2nd rank in Regional Mathematical Olympiad 2002 in the Eastern Region.

## Coursework

- **At UChicago:**  
Discrete Mathematics, Introduction to AI, Stochastic Processes, Analysis, Machine Learning, Learning theory, Approximation Algorithms, Introduction to Wavelets, Probabilistic approaches to Machine Learning
- **At IIT Kanpur:**  
'Data Structures and Algorithms, Theory of Computation, Artificial Intelligence Programming, Knowledge Discovery and Machine Learning, Finite Automata on Infinite Inputs, Real Analysis, BioInformatics.

## Technical Skills

- Platforms : MS Windows 9x/Me/2000/NT/XP, Linux(All Distributions)
- Languages : C/C++/C#, Java, ML, LISP, PROLOG, Assembly Language for 80x86 architectures
- Other : PHP scripting, L<sup>A</sup>T<sub>E</sub>X, SHELL scripting, PERL, Python, R, Matlab

## References

- **S.V.N. Vishwanathan** ([vishy@stat.purdue.edu](mailto:vishy@stat.purdue.edu))  
Associate Professor in Statistics and Computer Science  
Purdue University
- **Ambuj Tewari** ([tewaria@umich.edu](mailto:tewaria@umich.edu))  
Assistant Professor in Statistics  
University of Michigan, Ann Arbor
- **Vikas Sindhwani** ([vikas.sindhwani@gmail.com](mailto:vikas.sindhwani@gmail.com))  
Research Staff Member  
IBM Research, Yorktown