

Tushar Vasant Khot

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Research Interests

Machine Learning, Statistical Relational Learning, Graphical Models, Information Extraction, Natural Language Processing, Large-scale Learning.

Education

University Of Wisconsin

Madison, USA.

MS, PhD

Computer Science, 2008-2014

Minor: Statistics and Management

Awards:

Alumni Scholarship 2008

National Institute Of Technology (NIT)

Tiruchirappalli, India.

Bachelor of Technology (B.Tech)

Computer Science, 2002-2006

Cumulative GPA: 9.67/10.00

Awards: *Gold Medalist (NITT)*,

Graduate Aptitude Test in Engineering

All India Rank 2

Work Experience

Google R&D Center, Bangalore, India

- Worked on classification of blogs
- Launched LocalSearch for India (local.google.co.in)
- Filed a patent application for geocoding Indian addresses

Software Engineer -II/III (06/06 – 06/08)

Amazon, Bangalore, India

- Worked on weblog analysis for A9 fraud detection

Software Intern (05/05 – 06/05)

Research Experience

University of Wisconsin, Madison, USA

"Efficient Learning of Statistical Relational Models"

Advisor: Jude Shavlik

Worked on developing efficient structure learning methods for relational models and information extraction from documents

Research Assistant (06/09 – 05/14)

Indiana University, Bloomington, USA

Advisor: Sriraam Natarajan

Worked on performing one-class classification for relational models (under review) and mentored graduate students.

Visiting Scholar (08/13 – 05/14)

Microsoft Research, Redmond, USA

Mentors: Matthew Richardson, Misha Bilenko

Worked on predicting user behavior based on their profiles

Research Intern (10/10 – 12/10)

Publications

Rigorously Reviewed Conferences/Journals

- **Tushar Khot**, Sriraam Natarajan and Jude Shavlik. *Relational One-Class Classification: A Non-Parametric Approach*. In AAAI 2014.
- **Tushar Khot**, Sriraam Natarajan, Kristian Kersting and Jude Shavlik. *Learning Relational Probabilistic Models from Partially Observed Data - Opening the Closed-World Assumption*. Accepted to ILP, 2013 (Invited to special issue of Machine Learning).
- Sriraam Natarajan, **Tushar Khot**, Kristian Kersting, Bernd Gutmann and Jude Shavlik. *Gradient-based Boosting for Statistical Relational Learning: The Relational Dependency Network Case*. Invited contribution to special issue of Machine Learning, Volume 86(1), 2012.
- **Tushar Khot**, Sriraam Natarajan, Kristian Kersting, Jude Shavlik. *Learning Markov Logic Networks via Functional Gradient Boosting*. In IEEE International Conference on Data Mining (ICDM) 2011.
- Sriraam Natarajan, **Tushar Khot**, Daniel Lowd, Kristian Kersting, Prasad Tadepalli and Jude Shavlik. *Exploiting Causal Independence in Markov Logic Networks: Combining Undirected and Directed Models*. In European Conference on Machine Learning (ECML) 2010.
- Sriraam Natarajan, Baidya N. Saha, Saket Joshi, Adam Edwards, Elizabeth Moody, **Tushar Khot**, Kristian Kersting, Christopher T. Whitlow and Joseph A. Maldjian. *Relational Learning helps in Three-way Classification of Alzheimer Patients from Structural Magnetic Resonance Images of the Brain*. International Journal of Machine Learning and Cybernetics, Springer 2013.
- Sriraam Natarajan, Phillip Odom, Saket Joshi, **Tushar Khot**, Kristian Kersting and Prasad Tadepalli. *Accelerating Imitation Learning in Relational Domains via Transfer by Initialization*. In Inductive Logic Programming (ILP), 2013.
- Sriraam Natarajan, Saket Joshi, Baidya Saha, Adam Edwards, Elizabeth Moody, **Tushar Khot**, Kristian Kersting, Christopher Whitlow and Joseph Maldjian. *A Machine Learning Pipeline for Three-way Classification of Alzheimer Patients from Structural Magnetic Resonance Images of the Brain*. In IEEE International Conference on Machine Learning and Applications (ICMLA) 2012.

Workshops

- Sriraam Natarajan, Jose Picado, **Tushar Khot**, Kristian Kersting, Christopher Re and Jude Shavlik. *Using Commonsense Knowledge to Automatically Create (Noisy) Training Examples from Text*. In StarAI workshop at AAAI 2013.
- **Tushar Khot**, Sriraam Natarajan, Kristian Kersting and Jude Shavlik. *Structure Learning with Hidden Data in Relational Domains*. In SRL Workshop at ICML, 2012.
- **Tushar Khot**, Siddharth Srivastava, Sriraam Natarajan and Jude Shavlik. *Learning Relational Structure for Temporal Relation Extraction*. In StarAI workshop at UAI, 2012.
- Xiaojin Zhu, Zhiting Xu, and **Tushar Khot**. *How Creative is your Writing? A Linguistic Creativity measure from Computer Science and Cognitive Psychology perspectives*. In CALC Workshop at NAACL, 2009.
- Xiaojin Zhu, Andrew B. Goldberg, and **Tushar Khot**. *Some new directions in Graph-based Semisupervised Learning*. In ICME, Special Session on Semi-Supervised Learning for Multimedia Analysis, 2009.

Research Projects

- I implemented BoostR, a general-purpose structure-learning approach for different statistical relational models in a Java-based Prolog engine. As part of this project, I implemented functional gradient boosting, expectation-maximization and one-class classification for relational models.
- As part of the Machine Reading DARPA project, I implemented a NLP pipeline to extract basic NLP structures such as parse trees, NER tags, etc. to generate first-order logic facts. These facts were then used by our learning approach to extract scoring relations from sports articles and temporal relations from news documents.
- As part of the DEFT DARPA project, I worked on the TREC Knowledge Base Acceleration (KBA) 2013 track to perform large scale relation extraction. I built a system to extract novel relations about Wikipedia/Twitter entities from 9 TB of raw text. I used a DB-based entity linking and relation extraction system along with a grid computing infrastructure to scale to millions of documents.

Skills

Languages: C/C++, Java, Perl, MATLAB, Shell Scripting, Prolog

Techonology: MapReduce, Big Table, Microsoft Scope, Condor Grid Computing, Stanford NLP Toolkit

Services

Reviewer: EACL'12, DAMI'13, StarAI'13, ECAI'14, StarAI'14

Sub-reviewer: COLISD '11, ACML'12, StarAI '12, IJCAI'13, ECML'13, AISTATS'13, VLDB'13, MLJ'14

References

Contact me for references