Jingrui He

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Research Interests Rare category analysis, heterogeneous learning, social media analytics, semi-conductor manufacturing, traffic analytics.

Education

9/2008-7/2010 PhD in Machine Learning Department, School of Computer Science, Carnegie Mellon University (Advisor: Prof. **Jaime Carbonell**)
Dissertation title: "Rare Category Analysis"

9/2005-9/2008 M. Sci. in Machine Learning Department, School of Computer Science, Carnegie Mellon University (Advisor: Prof. **Jaime Carbonell**)
Thesis title: "Rare Category Detection"

9/2002-7/2005 M. Eng. in Pattern Recognition and Intelligent System, Tsinghua University (Advisors: Prof. **Nanyuan Zhao** and Prof. **Changshui Zhang**)
Thesis title: "Machine Learning Methods in Image Retrieval"

9/1998-7/2002 B. Eng. in Automation Technology, Minor Degree in English, Tsinghua University

Employment History

1/2013-present Assistant Professor
Computer Science Department
Stevens Institute of Technology

8/2010-12/2012 Research Staff Member (full time)
IBM T.J. Watson Research Center

9/2005-7/2010 Graduate Research Assistant
Carnegie Mellon University

6/2008-8/2008 Summer Intern
IBM T.J. Watson Research Center

5/2006-7/2006 Summer Intern
Microsoft Research

9/2002-7/2005 Visiting Student
Microsoft Research

Publications

Book

1. ***J. He***. *Analysis of Rare Categories*. Springer-Verlag New York, LLC, November 2011.

Refereed Journal Publications

1. ***J. He***, H. Tong, and J. Carbonell. An Effective Framework for Characterizing Rare Category. *Frontiers of Computer Science on Best of ICDM2010*, 2012.
2. ***J. He***, and J. Carbonell. Coselection of Features and Instances for Unsupervised Rare Category Analysis. *Statistical Analysis and Data Mining Special Issue on Best of SDM2010, Vol. 3, Issue 6, pp. 417-430*, 2010.
3. F. Wu, C. Zhang, and ***J. He***. An Evolutionary System for Near-regular Texture Synthesis. *Journal of Pattern Recognition, Vol. 40, Issue 8, pp. 2271-2282*, 2007.
4. ***J. He***, M. Li, H.J. Zhang, H. Tong, and C. Zhang. Generalized Manifold-Ranking Based Image Retrieval. *IEEE Trans. on Image Processing, Vol. 15, No. 10, pp. 3170-3177*, 2006.

5. H. Tong, ***J. He***, M. Li, W.Y. Ma, H.J. Zhang, and C. Zhang. Manifold-Ranking Based Keyword Propagation for Image Retrieval. EURASIP Journal on Applied Signal Processing, *Special Issue on Information Mining from Multimedia Database*, 2006.

Refereed Conference Publications

1. D. Zhang, ***J. He***, L. Si, and L. Lawrence. MILEAGE: Multiple Instance LEArning with Global Embedding. *ICML* 2013.
2. D. Zhang, ***J. He***, and L. Lawrence. MI2LS: Multi-Instance Learning from Multiple Information Sources. *KDD* 2013.
3. ***J. He***, W. Shen, P. Divakaruni, L. Wynter, and R. Lawrence. Improving Traffic Prediction with Tweet Semantics. *IJCAI* 2013.
4. ***J. He***, H. Tong, Q. Mei, and B.K. Szymanski. GenDeR: A Generic Diversified Ranking Algorithm. *NIPS* 2012.
5. ***J. He***, and Y. Zhu. Hierarchical Multi-task Learning with Application to Wafer Quality Prediction. *ICDM* 2012.
6. X. Chen, ***J. He***, R. Lawrence, and J. Carbonell. Adaptive Multi-task Sparse Learning with an Application to fMRI Study. *SDM* 2012.
7. Y. Zhu, ***J. He***, and R. Lawrence. Hierarchical Modeling with Tensor Inputs. *AAAI* 2012.
8. Y. Zhu, R.J. Baseman, ***J. He***, D.D. Restaino, E. Yashchin. Virtual Metrology and Run-to-Run Control in Semiconductor Manufacturing. *18th ISSAT Int. Conf. on Reliability and Quality in Design*, 2012.
9. ***J. He***, and R. Lawrence. A Graph-based Framework for Multi-Task Multi-View Learning. *ICML* 2011.
10. H. Tong, ***J. He***, Z. Wen, and C.Y. Lin. Diversified Ranking on Large Graphs: an Optimization Viewpoint. *KDD* 2011.
11. D. Zhang, ***J. He***, Y. Liu, L. Si, and R. Lawrence. Multi-View Transfer Learning with a Large Margin Approach. *KDD* 2011.
12. ***J. He***, H. Tong, and J. Carbonell. Rare Category Characterization. *ICDM* 2010.
13. ***J. He***, and J. Carbonell. Co-Selection of Features and Instances for Unsupervised Rare Category Analysis. *SDM* 2010.
14. ***J. He***, Y. Liu, and R. Lawrence. Graph-based Transfer Learning. *CIKM* 2009.
15. ***J. He***, and J. Carbonell. Prior-Free Rare Category Detection. *SDM* 2009.
16. ***J. He***, Y. Liu, and R. Lawrence. Graph-based Rare Category Detection. *ICDM* 2008.
17. ***J. He***, and J. Carbonell. Rare Class Discovery Based on Active Learning. *Int. Symposium on Artificial Intelligence and Mathematics* 2008.
18. ***J. He***, and J. Carbonell. Nearest-Neighbor-Based Active Learning for Rare Category Detection. *NIPS* 2007.
19. ***J. He***, and B. Thiesson. Asymmetric Gradient Boosting with Application to Spam Filtering. *CEAS* 2007.
20. ***J. He***, J. Carbonell and Y. Liu. Graph-Based Semi-Supervised Learning as a Generative Model. *IJCAI* 2007.
21. H. Tong, ***J. He***, M. Li, C. Zhang, W.Y. Ma. Graph Based Multi-modality Learning. *ACM MM* 2005.
22. H. Tong, ***J. He***, M. Li, H.J. Zhang, and C. Zhang. A Unified Optimization Based Learning

Method for Image Retrieval. *CVPR* 2005.

23. ***J. He***, C. Zhang, N. Zhao, and H. Tong. Boosting Web Image Search by Co-Ranking. *ICASSP* 2005.
24. H. Tong, M. Li, H.J. Zhang, C. Zhang, and ***J. He***. Learning No-Reference Quality Metric by Examples. *Int. Multi-Media Modeling Conf.* 2005.
25. H. Tong, C. Li, ***J. He***, Q.A. Tran, H. Duan. Anomaly Internet Network Traffic Detection by Kernel Principle Component Classifier. *Int. Symposium on Neural Network* 2005.
26. H. Tong, C. Li, ***J. He***. Internet Traffic Prediction by W-Boost: Classification and Regression. *Int. Symposium on Neural Network* 2005.
27. ***J. He***, M. Li, H.J. Zhang, H. Tong, and C. Zhang. Manifold-Ranking Based Image Retrieval. *ACM MM* 2004.
28. ***J. He***, M. Li, H.J. Zhang, and C. Zhang. Symmetry Feature in Content-Based Image Retrieval. *ICIP* 2004.
29. ***J. He***, *M. Li*, H.J. Zhang, and C. Zhang. W-Boost and Its Application to Web Image Classification. *ICPR* 2004.
30. ***J. He***, M. Li, H.J. Zhang, H. Tong, and C. Zhang. Pseudo Relevance Feedback Based on Iterative Probabilistic One-Class SVMs in Web Image Retrieval. *Pacific-Rim Conf. on Multimedia* 2004.
31. ***J. He***, M. Li, H.J. Zhang, H. Tong, and C. Zhang. Automatic Peak Number Detection in Image Symmetry Analysis. *Pacific-Rim Conf. on Multimedia* 2004.
32. H. Tong, M. Li, H.J. Zhang, ***J. He***, and C. Zhang. Classification of Digital Photos Taken by Photographers or Home Users. *Pacific-Rim Conf. on Multimedia* 2004.
33. H. Tong, C. Li, and ***J. He***. Boosting Feed-Forward Neural Network for Internet Traffic Prediction. *Int. Conf. on Machine Learning and Cybernetics* 2004.
34. H. Tong, C. Li, and ***J. He***. A Boosting-based Framework for Self-similar and Non-linear Internet Traffic Prediction. *Int. Symposium on Neural Network* 2004.

Patents (Filed)

1. Method and System for Wafer Quality Predictive Modeling based on Multi-Source Information with Heterogeneous Relatedness.
2. A Run-to-Run Control System and Method Utilizing Virtual Metrology in Semiconductor Manufacturing.
3. A System for Concurrent Classification of Entities across Multiple Channels.
4. Method and System for Hierarchical Wafer Quality Predictive Modeling.
5. Method and System for Measuring the Goodness of a Top-K Diversified Ranking List on Graphs.
6. Method and System for Finding a Top-K Diversified Ranking List on Graphs.
7. A System and Method for Automated Labeling of Text Documents Using Ontologies.
8. Graph-based Transfer Learning.

Awards

2010	IEEE ICDM 2010 Contest on Traffic Prediction for Intelligent GPS Navigation Task 2 (Jams): Runner-up (team leader); Task 3 (GPS): Runner-up (team member)
2009, 2008	IBM Fellowship

2004	Tsinghua Samsung Fellowship for excellent student (top 1%)
2004	Best Presentation Award in WSM Group, Microsoft Research Asia
2002	Excellent Bachelor graduate award (top 2%), Beijing
	Excellent Bachelor graduate award (top 5%), Tsinghua University
2001	Three Good student (top 1%), Beijing
	Tsinghua Dong-Feng Qi-Che Fellowship for excellent student (first grade)
2000	Tsinghua 12-9 Fellowship for excellent student (first grade, top 1%)
1999	Tsinghua Bao Gang Fellowship for excellent student (first grade, top 1%)
	Tsinghua Fellowship for Excellent Academic Performance (first grade)
	Tsinghua Fellowship for Excellent Performance in Community Working
1998	No.1 in National College Entrance Examination in Liaoning Province (among more than 100, 000 competitors)
	Tsinghua Fellowship for Excellent Freshmen (first grade)
	He-Shi Yan-Ke Fellowship for excellent students (first grade), Liaoning Provincial Experimental Senior Middle School

Service

2014	Publicity Chair for ICML 2014.
	Program Committee for ICML 2014, SDM 2014, PAKDD 2014.
2013	Publicity Chair for ICML 2013.
	Publications Co-chair for KDD 2013.
	Program Committee for ICDM 2013, SDM 2013, PAKDD 2013, IJCAI2013, Int. Conf. on Internet Multimedia Computing and Service.
2012	Publicity Chair for ICML 2012.
	Publications Co-chair for KDD 2012.
	Program Committee for ICDM 2012, KDD workshop on Multimedia Data Mining (MDMKDD) 2012.
2011	Program Committee for KDD workshop on Multimedia Data Mining (MDMKDD) 2011, ICDM workshop on Optimization Based Methods for Emerging Data Mining Problems (OEDM) 2011.
Journal Review	IEEE Transactions on Pattern Analysis and Machine Intelligence
	IEEE Transactions on Multimedia
	IEEE Transactions on Circuits and Systems for Video Technology
	Pattern Recognition
	Data Mining and Knowledge Discovery
	Signal, Image and Video Processing
	Multimedia Systems Journal