Bert Huang

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Current Position

Postdoctoral Research Associate. University of Maryland

Research Interests

Machine learning with network and relational data, large-scale machine learning, probabilistic inference, belief propagation, network analysis, combinatorial optimization, learning theory, social media, collaborative filtering

Education

Doctor of Philosophy	Computer Science	Columbia University	2011
	Advised by T. Jebara and A. Salleb-Aouissi		
	Thesis title: *Learning with Degree-Based Subgraph Estimation*		
Master of Philosophy	Computer Science	Columbia University	2008
Master of Science	Computer Science	Columbia University	2006
Bachelor of Science	Computer Science	Brandeis University	2004
Bachelor of Arts	Philosophy	Brandeis University	2004

Awards

Andrew P. Kosoresow Memorial Award for Outstanding Performance in TA-ing and Service 2009 - 2010. Columbia University Department of Computer Science

Service Award 2008-2009. Columbia University Department of Computer Science

Research and Teaching Positions

Postdoctoral Research Associate. University of Maryland, LINQS. Conducted collaborative research on machine learning in network and relational domains, with focus on various topics including entity resolution and active learning. Supervised by L. Getoor. Fall 2011-present

Graduate Research Assistant. Columbia University Machine Learning Laboratory. Network Data Anonymization Project. Applied b-matching and clustering algorithms to perform data-driven anonymization of network traffic data. Fall 2010 - Summer 2011

Research Intern. IBM Research - Watson. Explored various spatial prediction approaches to perform analytics for city services as part of the Smarter Planet initiative. Summer 2010

Preceptor (Student Lecturer). Columbia University Department of Computer Science. Taught under-graduate level course in computer science each semester. Fall 2008 - Spring 2010

Graduate Research Assistant. Center for Computational Learning Systems (CCLS), Columbia University. Consolidated Edison project. Researched machine learning for New York City electrical grid data analysis, performing statistical prediction on susceptibility of component failure. Summer 2006 - Summer 2008, Summer 2009

Teaching

University of Maryland Department of Computer Science:

Co-Instructor. *Link Mining* (Joint with Lise Getoor). Spring 2012

Columbia University Department of Computer Science:

Instructor. *Object Oriented Programming and Design in Java.* Spring 2010

Instructor. *Data Structures in Java.* Fall 2009

Instructor. *Data Structures and Algorithms.* Spring 2009

Instructor. *Introduction to Computer Science and Programming in C.* Fall 2008

Teaching Assistant. *Machine Learning.* Spring 2007

Teaching Assistant. *Introduction to Computer Science and Programming in C.* Spring 2006

Publications

Refereed Journal Papers:

M. Merler, **B. Huang**, L. Xie, G. Hua, A. Natsev. *Semantic Model Vectors for Complex Video Event Recognition.* IEEE Transactions on Multimedia, Vol. 14, No. 1, February 2012.

C. Rudin, D. Waltz, R. Anderson, A. Boulanger, A. Salleb-Aouissi, M. Chow, H. Dutta, P. Gross, **B. Huang**, S. Ierome, D. Isaac, A. Kressner, R. Passonneau, A. Radeva, and L. Wu. *Machine Learning for the New York City Power Grid.* IEEE Transactions on Pattern Analysis and Machine Intelligence. Vol. 34, No. 2, February 2012.

Refereed Conference Papers:

B. Shaw, **B. Huang**, and T. Jebara. *Learning a Distance Metric from a Network.* Neural Information Processing Systems (NIPS) 2011. Poster presentation.

B. Huang and T. Jebara. *Fast b-Matching via Sufficient Selection Belief Propagation.* International Conference on Artificial Intelligence and Statistics (AISTATS) 2011. Poster presentation.

B. Huang and T. Jebara. *Collaborative Filtering via Rating Concentration.* International Conference on Artificial Intelligence and Statistics (AISTATS) 2010. Poster presentation.

B. Huang and T. Jebara. *Exact Graph Structure Estimation with Degree Priors.* International Conference on Machine Learning and Applications (ICMLA) 2009. Oral presentation.

B. Huang, A. Salleb-Aouissi, and P. Gross. *Alive on Back-feed Culprit Identification via Machine Learning.* International Conference on Machine Learning and Applications (ICMLA) 2009. Special Session on Machine Learning in Energy Applications. Poster presentation.

A. Salleb-Aouissi, **B. Huang**, and D. Waltz. *Discovering Characterization Rules from Rankings.* International Conference on Machine Learning and Applications (ICMLA) 2009. Oral presentation (by first author).

B. Huang and A. Salleb-Aouissi. *Maximum Entropy Density Estimation with Incomplete Presence-Only Data.* International Conference on Artificial Intelligence and Statistics (AISTATS 2009). Poster presentation.

A. Salleb-Aouissi, **B. Huang**, and D. Waltz: Vers des Machines Vecteurs Support "Actionnables": Une Approche Fonde sur le Classement. Extraction et Gestion des Connaissances (EGC 2008). Oral presentation (by first author). Best paper award.

B. Huang and T. Jebara. *Loopy Belief Propagation for Bipartite Maximum Weight b-Matching.* International Conference on Artificial Intelligence and Statistics (AISTATS 2007). Oral presentation.

Refereed Workshop Papers and Abstracts:

G. Namata, B. London, L. Getoor, and **B. Huang**. *Query-driven Active Surveying for Collective Classification*. International Conference on Machine Learning 2012 Workshop: Mining and Learning with Graphs (MLG). Oral presentation.

B. Huang, B. Shaw, and T. Jebara. *Learning a Degree-Augmented Distance Metric from a Network*. Beyond Mahalanobis: Supervised Large-Scale Learning of Similarity. NIPS 2011 workshop. Oral presentation.

B. Huang, B. Shaw, and T. Jebara. *Network Prediction with Degree Distributional Metric Learning*. Interdisciplinary Workshop on Information and Decision in Social Networks (WIDS) 2011. Poster and abstract.

B. Huang and T. Jebara. *Learning with Subgraph Estimation and Degree Priors*. New York Academy of Sciences Machine Learning Symposium 2009. Poster and abstract.

B. Huang and T. Jebara. *Maximum Likelihood Graph Estimation with Degree Priors*. Neural Information Processing Systems (NIPS 2008) Workshop: Analyzing Graphs. Oral presentation.

B. Huang and T. Jebara. *Approximating the Permanent with Belief Propagation*. New York Academy of Sciences Machine Learning Symposium 2007. Poster and abstract.

B. Huang and A. Salleb-Aouissi. *Maximum Entropy Density Estimation with Incomplete Data*. New York Academy of Sciences Machine Learning Symposium 2007. Poster and abstract.

B. Huang and T. Jebara. *Maximum Weight b-Matching via Belief Propagation*. New York Academy of Sciences Machine Learning Symposium 2006. Poster and abstract.

Unrefereed Technical Reports:

M. Hill, G. Hua, A. Natsev, J. Smith, L. Xie, **B. Huang**, M. Merler, H. Ouyang, *IBM Research TRECVID-2010 Video Copy Detection and Multimedia Event Detection System*, Notebook Paper, National Institute of Standards and Technology, Nov 2010.

B. Huang and T. Jebara. *Approximating the Permanent with Belief Propagation*.
http://arxiv.org/abs/0908.1769

Research Talks

Learning a Degree-Augmented Distance Metric from a Network. Beyond Mahalanobis: Supervised Large-Scale Learning of Similarity, NIPS 2011 workshop, Sierra Nevada, Spain. December 2011

Learning with Degree-based Subgraph Estimation. University of Maryland Department of Computer Science, College Park, MD. June 2011

Learning with Degree-based Subgraph Estimation. Auton Lab, Carnegie Mellon University Robotics Institute, Pittsburgh, PA. June 2011

Exact Graph Structure Estimation with Degree Priors. International Conference on Machine Learning and Applications, Miami, FL. December 2009

Loopy Belief Propagation for Bipartite Maximum Weight b-Matching. International Conference on Artificial Intelligence and Statistics, San Juan, Puerto Rico. March 2007

Patents

T. Jebara, B. Shaw, and **B. Huang**. *Network Information Methods Devices and Systems*, Provisional Filing IR CU12120. Assignee Name and Address: The Trustees of Columbia University in the City of New York, 2011

T. Jebara and **B. Huang**. *B-Matching Using Sufficient Selection Belief Propagation*, U.S. Provisional Patent Application Nos. 61/472,038. Assignee Name and Address: The Trustees of Columbia University in the City of New York, 2011

B. Huang, L. Xie, Y. Zhu, A. Hampapur. *A System for Modeling and Predicting Spatiotemporally Ambiguous Events*. IBM Research preliminary disclosure filed

T. Jebara and **B. Huang**. *Belief Propagation for Generalized Matching*, U.S. Provisional Patent Application Nos. 12/864,438. Assignee Name and Address: The Trustees of Columbia University in the City of New York, 2010

T. Jebara and **B. Huang**. *A Distributed Belief Propagation Algorithm for Efficient and Exact Solutions of Generalized Matching Problems and Auctions*, U.S. Provisional Patent Application Nos. 61/023,767 and 61/029,206. Assignee Name and Address: The Trustees of Columbia University in the City of New York, 2008

Academic Service

Peer Reviewer. Journal of Machine Learning Research 2011,2012.

Program Committee Member. Uncertainty in Artificial Intelligence (UAI) 2012

Program Committee Member. International Conference on Machine Learning (ICML) 2012

Peer Reviewer. IEEE Transactions on Knowledge and Data Engineering (TKDE) 2011, 2012

Peer Reviewer. IEEE Transactions on Information Theory (T-IT) 2011.

Peer Reviewer. International Journal on Computational Statistics (CompStat) 2011, 2010

Program Committee Member. International Conference on Pattern Recognition Applications and Methods (ICPRAM) 2012

Peer Reviewer. IEEE International Symposium on Information Theory (ISIT) 2011

Program Committee Member. Uncertainty in Artificial Intelligence (UAI) 2011

Peer Reviewer. IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI) 2011

Peer Reviewer. Neural Information Processing Systems (NIPS) 2010

Program Committee Member. Uncertainty in Artificial Intelligence (UAI) 2010

External Reviewer. Extraction et Gestion des Connaissances (EGC) 2010

External Reviewer. Neural Information Processing Systems (NIPS) 2009

External Reviewer. Knowledge Discovery and Data Mining (KDD) 2009

External Reviewer. European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD 2008)

External Reviewer. Artificial Intelligence and Statistics (AISTATS) 2007

External Reviewer. Computer Vision and Pattern Recognition (CVPR) 2007

Community Service

PhD Representative. Columbia University Computer Science Department. Represented PhD student concerns to the faculty, found volunteers for the community service program, reported on faculty meetings to PhD students. Spring 2008 - Spring 2010