

Shiyu Chang

CONTACT INFORMATION	IBM Thomas J. Watson Research Center 1101 Kitchawan Road, Yorktown Heights, NY 10598 USA	<i>Mobile:</i> (217) 722-3254 <i>E-mail:</i> mnbvcxz210@gmail.com <i>Website:</i> www.ifp.uiuc.edu/~chang87
RESEARCH INTERESTS	<ul style="list-style-type: none">• Machine Learning and Data Mining• Probabilistic and Deep Generative Modeling• Computer Vision and Pattern Recognition• Smart and Connected Communities• Social Media and Social Network Analysis• Large-scale Information Computing and Personalization• Multimedia Information Search and Retrieval• Healthcare Analytics and Big Data in Finance	
EDUCATION	University of Illinois at Urbana - Champaign	May, 2014 - October, 2016
	<ul style="list-style-type: none">• Ph.D., Department of Electrical and Computer Engineering, Urbana, IL, USA• Thesis Topic: Similarity Learning in the Era of Big Data• Advisor: Prof. Thomas S. Huang	
	University of Illinois at Urbana - Champaign	May, 2011 - May, 2014
	<ul style="list-style-type: none">• Master of Science, Department of Electrical and Computer Engineering, Urbana, IL, USA• Advisor: Prof. Thomas S. Huang	
	University of Illinois at Urbana - Champaign	August, 2008 - May, 2011
	<ul style="list-style-type: none">• Bachelor of Science, Department of Electrical and Computer Engineering, Urbana, IL, USA• Graduation with the highest honor• GPA: 3.96/4.00 Department Academic Curriculum Rank: 6/309	
HONORS AND AWARDS	<ul style="list-style-type: none">• Thomas and Margaret Huang Award for Graduate Research• IJCAI Best Presentation Award Finalist• ICDM Best Student Paper Award• Samsung Best Paper Award Finalist (92 out of 1,100 submissions)• Kodak Fellowship Award• Bronze Tablet Award	April, 2016 July, 2015 December, 2014 October, 2014 August, 2014 May, 2011
RESEARCH EXPERIENCE	IBM T. J. Watson Research Center, Yorktown, NY, USA <i>Research Staff Member</i>	September, 2016 - present
	<ul style="list-style-type: none">• Deep learning for big data analytics and understandings• Similarity learning for linked and high-dimensional data• Multimedia data mining and signal processing• Recommender systems for social evolving activities• Large-scale multi-modal semantic analysis• Streaming data mining and sequential predictions	
	University of Illinois at Urbana - Champaign, Urbana, IL, USA <i>Research Assistant</i> , Advisor: Prof. Thomas S. Huang	Aug, 2010 - Sep, 2016
	Jump Trading, Chicago, IL, USA <i>Algorithmic Trader Intern</i> , Manager: Ken Terao	May, 2016 - June, 2016

Yahoo! Labs, Sunnyvale, CA, USA May, 2015 - August, 2015
Research Intern, Manager: Dr. Yi Chang

IBM T. J. Watson Research Center, Yorktown, NY, USA May, 2014 - August, 2014
Research Intern, Mentor: Dr. Charu C. Aggarwal

Samsung Research America, San Jose, CA, USA Jan, 2014 - May, 2014
Research Intern, Mentor: Dr. Jiayu Zhou

IBM T. J. Watson Research Center, Yorktown, NY, USA May, 2013 - August, 2013
Research Intern, Mentor: Dr. Charu C. Aggarwal

Microsoft Research Asia, Beijing, China May, 2012 - August, 2012
Research Intern, Mentor: Dr. Jingdong Wang

Wolfram Research Inc., Champaign, IL, USA June, 2011 - August, 2011
Research Engineer, Mentor: Dr. Lambert Chao

PROPOSAL
 WRITING
 EXPERIENCE

Granted Projects:

- Hierarchical Feature Learning by Heterogeneous Networks with Application to Face Verification (NSF IIS-1318971) September, 2013 - August, 2016
 Awarded Amount: **\$408,612**
- Deep Learning for Stock Price Prediction December, 2015 - December, 2016
 Awarded Amount: **\$149,671**

Others Writing Experience:

- DARPA SIMPLEX (2014) and ARL NS-CTA (2014).

TEACHING
 EXPERIENCE

ECE 398: Making Sense of Big Data Fall 2014 and Spring 2015
Teaching Assistant, Instructor: Prof. Lav R. Varshney

ECE 547: Topics on Image Processing Fall 2011, 2012 and 2013
Teaching Assistant, Instructor: Prof. Thomas S. Huang

ECE 417: Multimedia Signal Processing Spring 2011, 2012 and 2013
Teaching Assistant, Instructor: Prof. Thomas S. Huang

ECE 110: Introduction to Elec. and Comp. Engineering Spring 2009 - Spring 2011
Undergraduate Teaching Assistant, Instructor: Prof. Marie-Christine Brunet

PATENTS

S. Chang, J. Tang, D. Yin and Y. Chang. “Streaming Recommender Systems”. Yahoo! Labs. US pattern pending.

BOOK CHAPTERS

S. Chang, W. Han, X. Liu, N. Xu, P. Khorrami, and T. S. Huang. “Multimedia Classification”, in Data Classification: Algorithms and Applications. Editor: Charu C. Aggarwal, CRC Press.

S. Tsai, G. Qi, **S. Chang**, M. Tsai and T. S. Huang. “Clustering Multimedia Data”, in Data Clustering: Algorithms and Applications, Editor: Charu C. Aggarwal and Chandan Reddy, CRC Press.

SELECTED
 JOURNAL PAPERS

J. Tang, **S. Chang**, G. Qi, Q. Tian, Y. Rui and T. S. Huang. “LEGO-MM: Learning Structured Model by Probabilistic Logic Ontology Tree for Multimedia”, *IEEE Transactions on Image Processing* (TIP), 2016.

S. Chang, G. Qi, Y. Yang, C. C. Aggarwal, J. Zhou, M. Wang and T. S. Huang. “Large-scale

Supervised Similarity Learning in Networks”, *Knowledge and Information Systems (KAIS)*, 2016. (Invited submission, the best of ICDM).

G. Liu, **S. Chang** and Y. Ma. “Blind Image Deblurring Using Spectral Properties of Convolution Operators”, *IEEE Transactions on Image Processing (TIP)*, 2014.

SELECTED
CONFERENCE
PAPERS

(* INDICATES AUTHORS
WITH EQUAL
CONTRIBUTIONS)

S. Chang, Y. Zhang, J. Tang, D. Yin, Y. Chang, M. A. Hasegawa-Johnson and T. S. Huang. “Streaming Recommender Systems”. *ACM International World Wide Web Conference (WWW)*, 2017.

S. Chang*, Y. Zhang*, J. Tang, D. Yin, Y. Chang, M. A. Hasegawa-Johnson and T. S. Huang. “Positive-Unlabeled Learning in Streaming Networks”. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2016.

S. Chang, W. Han, J. Tang, G. Qi, C. C. Aggarwal and T. S. Huang. “Heterogeneous Network Embedding via Deep Architectures”. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2015.

S. Chang, J. Zhou, P. Chubak, J. Hu and T. S. Huang. “A Space Alignment Method for Cold-Start TV Show Recommendations”. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2015.

J. Tang, **S. Chang**, C. C. Aggarwal, and H. Liu. “Negative Link Prediction in Social Media”. *ACM International Conference on Web Search and Data Mining (WSDM)*, 2015.

S. Chang, G. Qi, C. C. Aggarwal, J. Zhou, M. Wang and T. S. Huang. “Factorized Similarity Learning in Networks”. *IEEE International Conference on Data Mining (ICDM)*, 2014. (**The best student paper award**).

S. Chang, C. C. Aggarwal and T. S. Huang. “Learning Local Semantic Distances with Limited Supervision”. *IEEE International Conference on Data Mining (ICDM)*, 2014.

S. Chang, G. Qi, J. Tang, Q. Tian, Y. Rui and T. S. Huang. “Multimedia LEGO: Learning Structured Model by Probabilistic Logic Ontology Tree”. *IEEE International Conference on Data Mining (ICDM)*, 2013.

Z. Li, **S. Chang**, F. Liang, T. S. Huang, L. Cao and J. R. Smith. “Learning Locally-Adaptive Decision Functions for Person Verification”. *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2013.

OTHER
PUBLICATIONS

(† INDICATES STUDENTS
I ADVISED OR CO-ADVISED
WHILE PREPARING THE
MANUSCRIPTS)

T. L. Paine, P. Khorrami, **S. Chang**, Y. Yang, P. Ramachandran, M. A. Hasegawa-Johnson and T. S. Huang. “Fast Wavenet Generation Algorithm”. *arXiv:1611.09482*, 2016.

Q. Wang†, P. Gong, **S. Chang**, T. S. Huang, and J. Zhou. “Robust Convex Clustering Analysis”. *IEEE International Conference on Data Mining (ICDM)*, 2016.

M. Zhan†, S. Cao†, B. Qian, **S. Chang** and J. Wei. “Low-Rank Sparse Feature Selection for Patient Similarity Learning”. *IEEE International Conference on Data Mining (ICDM)*, 2016.

Z. Wang, **S. Chang**, Y. Yang, D. Liu, and T. S. Huang. “Studying Very Low Resolution Recognition Using Deep Networks”. *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2016.

Z. Wang, **S. Chang**, Y. Yang, J. Zhou, M. Wang and T. S. Huang. “Learning A Task-Specific Deep

- Architecture for Clustering”. *SIAM International Conference on Data Mining (SDM)*, 2016.
- Z. Wang, D. Liu, **S. Chang**, Q. Ling and T. S. Huang. “D³: Deep Dual-Domain Based Fast Restoration of JPEG-Compressed Images”. *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2016.
- Z. Wang, **S. Chang**, Y. Yang, Q. Ling and T. S. Huang. “Learning A Deep ℓ_∞ Encoder for Hashing”. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2016.
- Z. Wang, Y. Yang, Z. Wang, **S. Chang**, J. Yang and T. S. Huang. “Learning Super-Resolution Jointly from External and Internal Examples”, *IEEE Transactions on Image Processing (TIP)*, 2015.
- Y. Yang, Z. Wang, Z. Wang, **S. Chang**, D. Liu, H. Shi, and T. S. Huang, “Epitomic Image Super-Resolution”, *International Joint Conference on Artificial Intelligence (IJCAI)*, 2015. (**Best Presentation Award Finalist**)
- Z. Wang, Y. Yang, **S. Chang**, J. Li, S. Fong and T. S. Huang. “A Joint Optimization Framework of Sparse Coding and Discriminative Clustering”. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2015.
- Z. Wang, X. Liu, **S. Chang**, J. Zhou, G. Qi and T. S. Huang. “Decentralized Recommender Systems”. *SIAM Data Mining Workshop on Machine Learning Methods for Recommender Systems (MLREC)*, 2015.
- Z. Wang, J. Yang, Z. Lin, J. Brandt, **S. Chang**, T. S. Huang. “Scalable Similarity Learning using Large Margin Neighborhood Embedding”. *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2015.
- T. Phan, J. Zhou, **S. Chang**, J. Hu and J. Lee. “Collaborative Recommendation of Photo-Taking Geolocations”. *The 3rd ACM Multimedia Workshop on Geotagging and Its Applications in Multimedia*, 2014.
- J. Zhou, **S. Chang** and J. Hu. “Augmented Matrix Factorization with Explicit Labels for Recommender Systems”. *The ACM Recommender System Workshop on Recommender Systems for Television and Online Video (Recsys Workshop)*, 2014.
- Y. Yang, Z. Wang, J. Yang, J. Wang, **S. Chang** and T. S. Huang. “Data Clustering by Laplacian Regularized l1-Graph”. *AAAI Conference on Artificial Intelligence (AAAI)*, 2014.
- Z. Wang, Z. Wang, **S. Chang**, J. Yang and T. S. Huang. “A Joint Perspective Towards Image Super-resolution: Unifying External and Self-examples”. *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2014.
- X. Liu, Y. Gao, R. Ji, **S. Chang** and T. S. Huang. “Localizing Web Videos from Heterogeneous Images”. In *AAAI Conference on Artificial Intelligence (AAAI Late-Breaking Developments)*. 2013.
- Z. Li, L. Cao, **S. Chang**, J. R. Smith, and T. S. Huang. “Beyond Mahalanobis Distance: Learning Second-order Discriminant function for people verification”. *IEEE Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2012.
- G. Qi, C. C. Aggarwal, Y. Rui, Q. Tian, **S. Chang**, and T. S. Huang. “Towards Cross-category Knowledge Propagation for Learning Visual Concepts”. *IEEE Computer Vision and Pattern Recognition (CVPR)*, 2011.
- J. Kemmerer, **S. Chang**, and M. Oelze. “A New Approach for Detecting Attenuation Changes

During High-intensity Focused Ultrasound”. *IEEE Ultrasonics Symposium (IUS)*, 2010.

SELECTED TALKS

- “Similarity Learning in Big Networks”. University of Oregon. November, 2016.
- “Similarity Learning in the Era of Big Data”. IBM T.J. Watson Research Center. December, 2015.
- “Similarity Learning and Its Applications”. Yahoo! Labs. August, 2015.
- “Large-scale Similarity Learning in Networks”. Nanjing University of Science and Technology. December, 2014.

ACADEMIC SERVICES

- Conference and Workshop Organizer:
 - Workshop on Biomedical Informatics with Optimization and Machine Learning (BOOM) in conjunction with International Joint Conference on Artificial Intelligence (Publicity Chair), 2017.
 - Workshop on Machine Learning Methods for Recommender Systems (MLRec) in conjunction with SIAM International Conference on Data Mining (Publicity Chair), 2015 - 2016.
 - Workshop on Frontier of Crowdsourcing in Multimedia Computing (FCMC) in conjunction with IEEE International Conference on Multimedia and Expo (Program Coordinator), 2014.
 - Workshop on Geotagging and Its Applications in Multimedia (GeoMM) in conjunction with ACM Multimedia Conference (Website Chair), 2014.
- Conference and Workshop PC Member:
 - SIAM International Conference on Data Mining (SDM), 2015 - 2017.
 - IEEE Winter Conference on Applications of Computer Vision, 2017.
 - IEEE International Conference on Multimedia and Expo (ICME), 2015 - 2017.
 - International Conference on Multimedia Modeling (MMM), 2016 - 2017.
 - Workshop on Biomedical Informatics with Optimization and Machine Learning (BOOM) in conjunction with International Joint Conference on Artificial Intelligence, 2016 - 2017.
 - IEEE International Conference on Image Processing (ICIP), 2015 - 2016.
 - IEEE International Conference on Healthcare Informatics (ICHI), 2015 - 2016.
 - International Joint Conference on Artificial Intelligence (IJCAI), 2015.
 - ACM Multimedia Conference (ACM MM), 2015.
 - IEEE International Conference on Data Science and Advanced Analytics (DSAA), 2015.
 - Workshop on Interactive Mining for Big Data (ImBig) in conjunction with the Conference on Information and Knowledge Management, 2014.
- Journal Reviewer:
 - IEEE Transactions on Knowledge and Data Engineering (TKDE).
 - IEEE Transactions on Multimedia (TMM).
 - IEEE Transactions on Image Processing (TIP).
 - IEEE Transactions on Signal Processing Letters (SPL).
 - ACM Transactions on Multimedia Computing Communications and Applications (TOMM).
 - Data Mining and Knowledge Discovery (DMKD).
 - IEEE Intelligent Systems (IS).
 - Neurocomputing (NEUCOM).
 - Pattern Recognition (PR).
 - Pattern Recognition Letters (PRL).
 - Machine Vision and Applications (MVAP).
 - Multidimensional Systems and Signal Process (MULT)