

# Hongfu Liu

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<b>POSITION</b>	<b>Brandeis University</b> Assistant Professor in Michtom School of Computer Science	Waltham, MA, USA 07/2018 - now
<b>EDUCATION</b>	<b>Northeastern University</b> Ph.D. in Computer Engineering <i>Advisor:</i> Professor Yun Raymond Fu	Boston, MA, USA 09/2014 - 04/2018
	<b>Beihang University</b> M.Eng. in Management Science and Engineering <i>Advisor:</i> Professor Junjie Wu	Beijing, China 09/2011 - 06/2014
	<b>Beihang University</b> B.Eng. in Information Management and Information System	Beijing, China 09/2007 - 06/2011
	<b>Beihang University</b> B.S. in Applied Mathematics	Beijing, China 09/2007 - 06/2011
	<b>Beihang University</b> B.A. in Law	Beijing, China 09/2007 - 06/2011
<b>RESEARCH INTERESTS</b>	<ul style="list-style-type: none"><li>• <b>Cluster Analysis:</b> consensus clustering, constrained clustering, balanced clustering, multi-view clustering, interpretable clustering, big data clustering</li><li>• <b>Outlier Detection:</b> multi-view outlier detection, spammer detection, zombie user detection, bi-sampling outlier detection, jointly clustering and outlier detection</li><li>• <b>Transfer Learning:</b> heterogenous domain adaptation, unsupervised domain adaptation, structure-preserved domain adaptation</li><li>• <b>Feature Selection:</b> unsupervised feature selection, multi-view feature selection</li></ul>	
<b>HONORS &amp; AWARDS</b>	<ul style="list-style-type: none"><li>• First Place Award in MS-Celel-1M Grand Challenge <i>International Conference on Computer Vision</i> 2017</li><li>• IJCAI Student Travel Award <i>International Joint Conference on Artificial Intelligence</i> 2017</li><li>• KDD Student Travel Award <i>ACM SIGKDD Conference on Knowledge Discovery and Data Mining</i> 2016</li><li>• SIGIR Student Travel Award <i>ACM International Conference Information and Knowledge Management</i> 2016</li><li>• ICDM Student Travel Award <i>IEEE Conference on Data Mining</i> 2016</li><li>• AAAI Student Travel Award <i>AAAI Conference on Artificial Intelligence</i> 2016</li><li>• IEEE BigData Student Travel Award <i>IEEE Conference on Big Data</i> 2016</li><li>• Top 20 New Star in Data Mining <i>Microsoft Academic Search</i> 2016</li><li>• The inaugural Adobe Research Fellowship Finalist <i>Adobe Research</i> 2016</li><li>• ICDM Student Travel Award <i>IEEE Conference on Data Mining</i> 2015</li><li>• Dean Fellowship <i>Northeastern University</i> 2014</li><li>• Outstanding Graduate <i>Beijing Education Commission</i> 2014</li></ul>	

- Outstanding Graduate Thesis 2014  
*Beihang University*
- National Scholarship 2013  
*Ministry of Education of China*
- Top 10 Graduate 2013  
*School of Economics and Management in Beihang University*
- Data Mining Innovation Award 2013  
*China Internet Network Information Center*
- Airbus Scholarship 2012  
*Beihang University*
- Outstanding Volunteer Prize 2012  
*School of Economics and Management in Beihang University*
- Outstanding Undergraduate Thesis 2011  
*Beihang University*
- Outstanding Undergraduate 2011  
*Beijing Education Commission*
- Board Scholarships 2011  
*School of Economics and Management in Beihang University*
- Google Student Travel Award 2010  
*Student Symposium on Machine Learning and Applications*
- Citigroup Scholarship 2010  
*Beihang University*
- Kwang-Hua Scholarship 2009  
*Beihang University*
- Samsung Scholarship 2008  
*Beihang University*

**INDUSTRY  
EXPERIENCE**

- **Microsoft Research Asia** Beijing, China  
Data Scientist Intern, *Mentor*: Dr. Lintao Zhang & Dr. Qi Chen 06/2017 - 08/2017  
Project: Fast Clustering with Flexible Balance Constraints
- **Adobe Research** San Jose, CA  
Data Scientist Intern, *Mentor*: Dr. Nikos Vlassis 05/2016 - 07/2016  
Project: Greedy K-means-based Consensus Clustering for Customer Segmentation

**TEACHING  
EXPERIENCE**

- LECTURER
  - ◇ *Introduction to E-Commerce, Undergraduate*, Fall 2013
  - ◇ *Operation Research, Junior College Student*, Fall 2011
- ASSISTANT
  - ◇ *Machine Learning and Pattern Recognition*, Fall 2016
  - ◇ *Foundation of Visualization*, Fall 2015
  - ◇ *Modern Programming Design, Undergraduate*, Fall 2013
  - ◇ *Introduction to Java Programming*, Undergraduate, Fall 2009, 2010, Spring 2013
  - ◇ *Management Information Systems*, MBA, Spring & Fall 2011, Spring 2013
  - ◇ *Linear Algebra*, Undergraduate, Fall 2012

## PUBLICATIONS • JOURNAL PAPERS

◇ 2 **TPAMI**, 3 **TKDE**, 1 **DMKD**, 1 **TKDD**, 1 **BMC**, 1 **TFS**, 1 **TIP**, 1 **IS**

1. **Hongfu Liu**, Ming Shao, Zhengming Ding and Yun Fu. Structure-Preserved Unsupervised Domain Adaptation. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2018.
  2. Joseph Robinson, Ming Shao, Yue Wu, **Hongfu Liu**, Timothy Gillis and Yun Fu. Visual Kinship Recognition of Families in the Wild. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2018.
  3. **Hongfu Liu** and Yun Fu. Consensus Guided Multi-View Clustering. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 2018.
  4. Xue Li and **Hongfu Liu**. Greedy Optimization for K-means-based Consensus Clustering. *Tsinghua Science and Technology (TST)*, 2018.
  5. **Hongfu Liu**, Zhiqiang Tao and Yun Fu. Partition Level Constrained Clustering. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2017.
  6. **Hongfu Liu**, Ming Shao, Sheng Li and Yun Fu. Infinite Ensemble Clustering. *Data Mining and Knowledge Discovery (DMKD)*, 2017.
  7. **Hongfu Liu**, Junjie Wu, Tongliang Liu, Dacheng Tao and Yun Fu. Spectral Ensemble Clustering: Theoretical and Practical Evidence. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2017.
  8. **Hongfu Liu**, Rui Zhao, Hongsheng Fang, Feixiong Chen, Yun Fu and Yuyang Liu. Entropy-based Consensus Clustering for Patient Stratification. *Bioinformatics (BMC)*, 2017.
  9. Handong Zhao, **Hongfu Liu**, Zhengming Ding and Yun Fu. Consensus Regularized Multi-View Outlier Detection. *IEEE Transactions on Image Processing (TIP)*, 2017.
  10. Junjie Wu, Ziang Wu, Jie Cao, **Hongfu Liu**, Guoqing Chen and Yanchuan Zhang. Fuzzy Consensus Clustering with Applications on Big Data. *IEEE Transactions on Fuzzy Systems (TFS)*, 2017.
  11. Junjie Wu, **Hongfu Liu**, Hui Xiong, Jie Cao and Jian Chen. K-means-based Consensus Clustering: A Unified View. *IEEE Transactions on Knowledge And Data Engineering (TKDE)*, 2015.
  12. Junjie Wu, Shiwei Zhu, **Hongfu Liu** and Guoping Xia. Cosine Interesting Pattern Discovery. *Information Sciences (IS)*, 2012.
- ◇ Under Review: 1 **JMLR**, 2 **TPAMI**, 1 **TKDE**, 1 **TKDD**, 1 **TNNLS**, 1 **JOC**, 1 **TSP**, 1 **JSS**, 1 **IVC**, 1 **EJOR**
1. **Hongfu Liu**, Junxiang Chen, Jennifer G. Dy and Yun Fu. K-means Clustering for Complex Non-clustering Problem. *Journal of Machine Learning Research (JMLR)*.
  2. **Hongfu Liu**, Ming Shao and Yun Fu. Feature Selection with Unsupervised Consensus Guidance. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*.
  3. **Hongfu Liu**, Junjie Wu, Zhiang Wu, Dacheng Tao and Yun Fu. Informative Consensus Clustering. *Journal on Computing (JOC)*.
  4. Zhiqiang, Tao, **Hongfu Liu**, Huazhu Fu and Yun Fu. Multi-View Saliency-Guided Constrained Clustering for Image Cosegmentation. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*.
  5. Zhiqiang Tao, **Hongfu Liu**, Sheng Li, Zhengming Ding and Yun Fu. Robust Spectral Ensemble Clustering via Rank Minimization. *ACM Transactions on Knowledge Discovery from Data (TKDD)*.
  6. Zhiqiang Tao, **Hongfu Liu**, Sheng Li, Zhengming Ding and Yun Fu. Marginalized Multi-View Ensemble Clustering. *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*.
  7. Handong Zhao, **Hongfu Liu**, Zhengming Ding and Yun Fu. Robust Graph Regularized Incomplete Multi-view Clustering. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*.

8. Jun Li, **Hongfu Liu** and Yun Fu. Restricted Isometry Condition by Scale Null Space Property for Compressed Sensing. *IEEE Transactions on Signal Processing (TSP)*.
  9. Hao Lin, **Hongfu Liu** and Junjie Wu. KCC: A MATLAB Package for K-means-based Consensus Clustering. *Journal of Statistical Software (JSS)*.
  10. Yue Wu, **Hongfu Liu**, Jun Li and Yun Fu. Improving Face Representation Learning with Center Invariant Loss. *Image and Vision Computing (IVC)*.
  11. Xue Li, **Hongfu Liu** and Bin Zhu. Evolutive Preference Analysis with Numerical Preference Relations. *European Journal of Operational Research (EJOR)*
  12. Deqing Wang, Chenwei Lu, Junjie Wu, **Hongfu Liu**, Wenjie Zhang and Hui Zhang. Softly Associative Transfer Learning for Cross-domain Classification. *IEEE Transactions on Cybernetics (TC)*.
- CONFERENCE PAPERS
    - ◇ 3 **KDD**, 4 **ICDM**, 1 **SDM**, 4 **IJCAI**, 4 **AAAI**, 1 **CIKM**, 2 **IEEE BigData**, 1 **HPCC**, 1 **ICSSM Best Paper**
    - 1. Jun Li, **Hongfu Liu** and Yun Fu. Predictive Coding Machine for Compressed Sensing and Image Denoising. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2018.
    - 2. Yue Wu, Zhengming Ding, **Hongfu Liu**, Joseph Robinson and Yun Fu. Kinship Classification through Latent Adaptive Subspace. *In Proceedings of IEEE Conference on Automatic Face and Gesture Recognition (FG)*, 2018.
    - 3. Jun Li, **Hongfu Liu**, Handong Zhao, and Yun Fu. Projective Low-rank Subspace Clustering via Learning Deep Encoder. *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, 2017.
    - 4. Zhiqiang Tao, **Hongfu Liu**, Sheng Li, Zhengming Ding and Yun Fu. From Ensemble Clustering to Multi-View Clustering. *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, 2017.
    - 5. Zhiqiang Tao\*, **Hongfu Liu\***, Huazhu Fu and Yun Fu. Image Cosegmentation via Saliency-Guided Constraint Clustering with Cosine Similarity. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2017. (\* means equal contribution)
    - 6. Zhiqiang Tao, **Hongfu Liu** and Yun Fu. Simultaneous Clustering and Ensemble. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2017.
    - 7. Sheng Li, **Hongfu Liu**, Zhiqiang Tao and Yun Fu. Multi-View Graph Learning with Adaptive Label Propagation. *In Proceedings of IEEE International Conference on Big Data (IEEE BigData)*, 2017.
    - 8. **Hongfu Liu**, Ming Shao, Sheng Li and Yun Fu. Infinite Ensemble for Image Clustering. *In Proceedings of ACM SIGKDD international conference on Knowledge Discovery and Data mining (KDD)*, 2016.
    - 9. **Hongfu Liu**, Haiyi Mao and Yun Fu. Robust Multi-View Feature Selection. *In Proceedings of IEEE International Conference on Data Mining (ICDM)*, 2016.
    - 10. **Hongfu Liu**, Ming Shao and Yun Fu. Structure-Preserved Multi-Source Domain Adaptation. *In Proceedings of IEEE International Conference on Data Mining (ICDM)*, 2016.
    - 11. **Hongfu Liu**, Ming Shao and Yun Fu. Consensus Guided Unsupervised Feature Selection. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2016.
    - 12. **Hongfu Liu**, Yuchao Zhang, Bo Deng and Yun Fu. Bi-sampling Ensemble Outlier Detection. *In Proceedings of IEEE International Conference on Big Data (IEEE BigData)*, 2016.
    - 13. Zhiqiang Tao, **Hongfu Liu**, Sheng Li and Yun Fu. Robust Spectral Ensemble Clustering. *In Proceeding of ACM International Conference on Information and Knowledge Management (CIKM)*, 2016.
    - 14. Handong Zhao, **Hongfu Liu** and Yun Fu. Incomplete Multi-modal Visual Data Grouping. *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, 2016.

15. **Hongfu Liu\***, Tongliang Liu\*, Junjie Wu, Dacheng Tao and Yun Fu. Spectral Ensemble Clustering. *In Proceedings of ACM SIGKDD international conference on Knowledge Discovery and Data mining (KDD)*, 2015. (\* means equal contribution)
16. **Hongfu Liu** and Yun Fu. Clustering with Partition Level Side Information. *In Proceedings of IEEE International Conference on Data Mining (ICDM)*, 2015.
17. **Hongfu Liu**, Junjie Wu, Dacheng Tao, Yuchao Zhang and Yun Fu. DIAS: A Disassemble-Assemble Framework for Highly Sparse Text Clustering. *In Proceedings of SIAM International Conference on Data Mining (SDM)*, 2015.
18. **Hongfu Liu**, Cheng Gong and Junjie Wu. Consensus Clustering on big data. *In Proceedings of IEEE International Conference on Service Systems and Service Management (ICSSSM Best Paper)*, 2015.
19. **Hongfu Liu**, Yuchao Zhang, Hao Lin and Junjie Wu. How Many Zombies Around You. *In Proceedings of the IEEE International Conference on Data Mining (ICDM)*, 2013.
20. **Hongfu Liu**, Yuchao Zhang and Xue Li. Consensus Ranking From a Utility View. *In Proceeding of International Conference on Natural Computation (ICNC)*, 2013.
21. Junjie Wu, **Hongfu Liu**, Hui Xiong and Jie Cao. A Theoretic Framework of K-means-based Consensus Clustering. *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, 2013.
22. Yaqiong Wang, **Hongfu Liu**, Hao Lin, Junjie Wu, Zhiang Wu and Jie Cao. SEA: A System for Event Analysis on Chinese Tweets. *In Proceedings of ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2013.
23. Yuchao Zhang and **Hongfu Liu**. A Reliable QoE-aware Framework for Cloud Service Monitoring and Ranking. *In Proceedings of International Conference on Electrical and Information Technologies for Rail Transportation (EITRT)*, 2013.
24. Yuchao Zhang, **Hongfu Liu** and Bo Deng. SLA-Driven State Monitoring for Cloud Services. *In Proceedings of the 15th IEEE International Conference on High Performance Computing and Communications (HPCC)*, 2013.
25. Yuchao Zhang, **Hongfu Liu** and Bo Deng. Evolutionary Clustering with DBSCAN. *In Proceeding of International Conference on Natural Computation (ICNC)*, 2013.
26. Di Zhao, **Hongfu Liu**, Hongyi Li. A Method Based on Grey Correlation Clustering for Improving the Hierarchy of Analytic Hierarchy Process. *In Proceedings of IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT)*, 2010.

- WORKSHOP AND DOCTORAL CONSORTIUM PAPERS

1. Yue Wu, **Hongfu Liu**, Yun Fu. Low-shot Face Recognition with Hybrid Classifiers. *In Proceedings of International Conference on Computer Vision Workshop (ICCV-W)*, 2017.
2. Yue Wu, **Hongfu Liu**, Jun Li and Yun Fu. Deep Face Recognition with Center Invariant Loss. *In Proceedings of ACM Multimedia Thematic Workshop (MM-W)*, 2017.

## PATENTS

- **Hongfu Liu**, Nikolaos Vlassis. *Customer Segmentation Via Consensus Clustering*  
US Patent. Filed: 11/12/2016.
- Junjie Wu, **Hongfu Liu**, Hong Li and Xiaoting Han. *A Kind of Text Classification Method Based on Consensus Clustering*  
CN Patent. Filed: 10/07/2015.

## ACADEMIC TALKS

### ◇ Invited Talks

- *From Consensus Clustering to K-means Clustering*  
Baidu, Sunnyvale, CA 2018
- *From Consensus Clustering to K-means Clustering*  
University of Michigan-Dearborn, Dearborn, MI 2018
- *From Consensus Clustering to K-means Clustering*  
Tulane University, New Orleans, LA 2018
- *From Consensus Clustering to K-means Clustering*  
University of Miami, Coral Gables, FL 2018
- *From Consensus Clustering to K-means Clustering*  
Stevens Institute of Technology, Hoboken, NJ 2018
- *From Consensus Clustering to K-means Clustering*  
Rochester Institute of Technology, Rochester, NY 2018
- *From Consensus Clustering to K-means Clustering*  
San Diego State University, San Diego, CA 2018
- *From Consensus Clustering to K-means Clustering*  
Brandeis University, Waltham, MA 2018
- *From Consensus Clustering to K-means Clustering*  
Case Western Reserve University, Cleveland, OH 2018
- *Consensus Clustering: A Tutorial*  
The Ohio State University, Columbus, OH 2017
- *K-means Solution for Complex Problem*  
Texas State University, San Marcos, TX 2017
- *K-means-based Consensus Clustering*  
Texas A&M University, College Station, TX 2017
- *Infinite Ensemble Clustering*  
Boston College, Chestnut Hill, MA 2017
- *Complex Problem, K-means Solution*  
University of Illinois Urbana-Champaign, Champaign, IL 2017
- *Consensus Clustering: A K-means Clustering View*  
Tufts University, Medford, MA 2017
- *Consensus Clustering for Industrial Applications*  
JD, Beijing, China 2017
- *Fast Clustering with Flexible Balance Constraints*  
Microsoft Research Asia, Beijing, China 2017
- *Spectral and Infinite Ensemble Clustering*  
UMass Dartmouth, North Dartmouth, MA 2017
- *Greedy K-means-based Consensus Clustering*  
Adobe Research, San Jose, CA 2016
- *K-means-based Consensus Clustering and its Applications*  
NEPSSS, Northeastern University, Boston, MA 2015

### ◇ Presentations at International Conferences

- International Joint Conference on Artificial Intelligence (**IJCAI**), Melbourne, Australia 2017
- IEEE Conference on Big Data (**IEEE BigData**), Washington, D.C. 2016
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), San Francisco, CA 2016
- AAAI Conference on Artificial Intelligence (**AAAI**), Phoenix, AZ 2016
- IEEE Conference on Data Mining (**ICDM**), Atlantic City, NJ 2015
- SIAM International Conference on Data Mining (**SDM**), Vancouver, Canada 2015
- International Joint Conference on Artificial Intelligence (**IJCAI**), Beijing, China 2013
- IEEE Conference on Data Mining (**ICDM**), Dallas, TX 2013

**PROFESSIONAL • Editorial Board**  
**ACTIVITIES**

- ◇ Architecture and Design Review
- ◇ Annals of Mathematics and Physics

• **Publicity Chair**

- ◇ International Workshop on Big Data Transfer Learning 2017

• **Senior Program Committee**

- ◇ AAAI Conference on Artificial Intelligence (**AAAI**) 2019

• **Program Committee**

- ◇ IEEE Conference on Data Mining (**ICDM**) 2018
- ◇ IEEE Conference on Big Data (**IEEE BigData**) 2018
- ◇ International Conference on Information Systems (**ICIS**) 2018
- ◇ Neural Information Processing Systems (**NIPS**) 2018
- ◇ AAAI Conference on Artificial Intelligence (**AAAI**) 2018
- ◇ IEEE International Conference on Multimedia Information Processing and Retrieval (**MIPR**) 2018
- ◇ AAAI Conference on Artificial Intelligence (**AAAI**) 2017
- ◇ International Joint Conference on Artificial Intelligence (**IJCAI**) 2017
- ◇ International Conference on Machine Learning and Applications (**ICMLA**) 2017
- ◇ International Joint Conference on Artificial Intelligence (**IJCAI**) 2016
- ◇ International Conference on Machine Learning and Applications (**ICMLA**) 2016

• **Journal Reviewer**

- ◇ IEEE Transactions on Knowledge and Data Engineering (**TKDE**)
- ◇ IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**)
- ◇ IEEE Transactions on Image Processing (**TIP**)
- ◇ IEEE Transactions on Cybernetics (**TC**)
- ◇ IEEE Transactions on Big Data (**TBD**)
- ◇ IEEE Computational Intelligence Magazine (**CIM**)
- ◇ IEEE Transactions on Emerging Topics in Computational Intelligence (**TETCI**)
- ◇ ACM Transactions on Knowledge Discovery from Data (**TKDD**)
- ◇ Bioinformatics (**BMC**)
- ◇ Information Science (**IS**)
- ◇ Neural Networks (**NN**)
- ◇ Applied Computing and Informatics (**ACI**)
- ◇ Computer Methods and Programs in Biomedicine (**CMPB**)
- ◇ Human-centric Computing and Information Sciences (**HCIS**)
- ◇ Journal of Electronic Imaging (**JEI**)
- ◇ International Journal on Artificial Intelligence Tools (**IJAIT**)
- ◇ Pattern Analysis and Applications (**PAA**)