Hongfu Liu

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POSITION

Brandeis University — Waltham, MA, USA
Assistant Professor in Michtom School of Computer Science — 07/2018 - now

EDUCATION

Northeastern University — Boston, MA, USA
Ph.D. in Computer Engineering — 09/2014 - 04/2018
Advisor: Professor Yun Raymond Fu

Beihang University — Beijing, China
M.Eng. in Management Science and Engineering — 09/2011 - 06/2014
Advisor: Professor Junjie Wu

Beihang University — Beijing, China
B.Eng. in Information Management and Information System — 09/2007 - 06/2011

Beihang University — Beijing, China
B.S. in Applied Mathematics — 09/2007 - 06/2011

Beihang University — Beijing, China
B.A. in Law — 09/2007 - 06/2011

RESEARCH INTERESTS

- **Cluster Analysis:** consensus clustering, constrained clustering, balanced clustering, multi-view clustering, interpretable clustering, big data clustering
- **Outlier Detection:** multi-view outlier detection, spammer detection, zombie user detection, bi-sampling outlier detection, jointly clustering and outlier detection
- **Transfer Learning:** heterogenous domain adaptation, unsupervised domain adaptation, structure-preserved domain adaptation
- **Feature Selection:** unsupervised feature selection, multi-view feature selection

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 Big Data, Undergraduate & Graduate*, Spring 2019
  ◇ *Introduction to Data Mining, Undergraduate & Graduate*, Fall 2018
  ◇ *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

TUTORIAL

1. Zhengming Ding, **Hongfu Liu** and Handong Zhao. Deep Multi-view Visual Data Analytics. *AAAI Conference on Artificial Intelligence* (**AAAI**), 2019.

PUBLICATIONS

- JOURNAL PAPERS

  ◇ 2 **TPAMI**, 4 **TKDE**, 1 **DMKD**, 2 **TKDD**, 1 **BMC**, 1 **TFS**, 1 **TIP**, 1 **IS**

  1. Deqing Wang, Chenwei Lu, Junjie Wu, **Hongfu Liu**, Wenjie Zhang and Fuzhen Zhuang. Softly Associative Transfer Learning for Cross-domain Classification. *IEEE Transactions on Cybernetics* (**TC**), 2019.
  2. **Hongfu Liu**, Ming Shao and Yun Fu. Feature Selection with Unsupervised Consensus Guidance. *IEEE Transactions on Knowledge and Data Engineering* (**TKDE**), 2018.
  3. 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**), 2018.
  4. Yue Wu, **Hongfu Liu**, Jun Li and Yun Fu. Improving Face Representation Learning with Center Invariant Loss. *Image and Vision Computing* (**IVC**), 2018.
  5. **Hongfu Liu**, Ming Shao, Zhengming Ding and Yun Fu. Structure-Preserved Unsupervised Domain Adaptation. *IEEE Transactions on Knowledge and Data Engineering* (**TKDE**), 2018.
  6. 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.
  7. **Hongfu Liu** and Yun Fu. Consensus Guided Multi-View Clustering. *ACM Transactions on Knowledge Discovery from Data* (**TKDD**), 2018.
  8. Xue Li and **Hongfu Liu**. Greedy Optimization for K-means-based Consensus Clustering. *Tsinghua Science and Technology* (**TST**), 2018.
  9. **Hongfu Liu**, Zhiqiang Tao and Yun Fu. Partition Level Constrained Clustering. *IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**), 2017.
  10. **Hongfu Liu**, Ming Shao, Sheng Li and Yun Fu. Infinite Ensemble Clustering. *Data Mining and Knowledge Discovery* (**DMKD**), 2017.
  11. **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.
  12. **Hongfu Liu**, Rui Zhao, Hongsheng Fang, Feixiong Chen, Yun Fu and Yuyang Liu. Entrpoy-based Consensus Clustering for Patient Stratification. *Bioinformatics* (**BMC**), 2017.
  13. Handong Zhao, **Hongfu Liu**, Zhengming Ding and Yun Fu. Consensus Regularized Multi-View Outlier Detection. *IEEE Transactions on Image Processing* (**TIP**), 2017.
  14. 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.
  15. 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.
  16. Junjie Wu, Shiwei Zhu, **Hongfu Liu** and Guoping Xia. Cosine Interesting Pattern Discovery. *Information Sciences* (**IS**), 2012.

- CONFERENCE PAPERS

  ◇ 3 **KDD**, 4 **ICDM**, 1 **SDM**, 1 **CVPR**, 4 **IJCAI**, 5 **AAAI**, 1 **CIKM**, 3 **IEEE BigData**, 1 **HPCC**, 1 **ICSSSM Best Paper**

  1. Zhengming Ding and **Hongfu Liu**. Marginalized Latent Semantic Encoder for Zero-Shot Learning. *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), 2019.
  2. Haitao Xiong, **Hongfu Liu**, Bineng Zhong and Yun Fu. Structured and Sparse Annotations for Image Emotion Distribution Learning. *In Proceedings of AAAI Conference on Artificial Intelligence* (**AAAI**), 2019.

3. **Hongfu Liu**, Ziming Huang, Yun Fu, Qi Chen, Mingqin Li, and Lintao Zhang. Fast Clustering with Flexible Balance Constraints. *In Proceedings of IEEE International Conference on Big Data* (**IEEE BigData**), 2018.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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)

9. Zhiqiang Tao, **Hongfu Liu** and Yun Fu. Simultaneous Clustering and Ensemble. *In Proceedings of AAAI Conference on Artificial Intelligence* (**AAAI**), 2017.

10. 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.

11. **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.

12. **Hongfu Liu**, Haiyi Mao and Yun Fu. Robust Multi-View Feature Selection. *In Proceedings of IEEE International Conference on Data Mining* (**ICDM**), 2016.

13. **Hongfu Liu**, Ming Shao and Yun Fu. Structure-Preserved Multi-Source Domain Adaptation. *In Proceedings of IEEE International Conference on Data Mining* (**ICDM**), 2016.

14. **Hongfu Liu**, Ming Shao and Yun Fu. Consensus Guided Unsupervised Feature Selection. *In Proceedings of AAAI Conference on Artificial Intelligence* (**AAAI**), 2016.

15. **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.

16. 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.

17. Handong Zhao, **Hongfu Liu** and Yun Fu. Incomplete Multi-modal Visual Data Grouping. *In Proceedings of International Joint Conference on Artificial Intelligence* (**IJCAI**), 2016.

18. **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)

19. **Hongfu Liu** and Yun Fu. Clustering with Partition Level Side Information. *In Proceedings of IEEE International Conference on Data Mining* (**ICDM**), 2015.

20. **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.

21. **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.

22. **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.

23. **Hongfu Liu**, Yuchao Zhang and Xue Li. Consensus Ranking From a Utility View. *In Proceeding of International Conference on Natural Computation* (**ICNC**), 2013.

24. 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.

25. 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.

26. 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.

27. 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.

28. Yuchao Zhang, **Hongfu Liu** and Bo Deng. Evolutionary Clustering with DBSCAN. *In Proceeding of International Conference on Natural Computation* (**ICNC**), 2013.

29. 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

  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.

HONORS & AWARDS

- Outstanding Self-Financed Students Abroad   2018
  Chinese Government Award
- First Place Award in MS-Celel-1M Grand Challenge   2017
  International Conference on Computer Vision
- IJCAI Student Travel Award   2017
  International Joint Conference on Artificial Intelligence
- KDD Student Travel Award   2016
  ACM SIGKDD Conference on Knowledge Discovery and Data Mining
- SIGIR Student Travel Award   2016
  ACM International Conference Information and Knowledge Management
- ICDM Student Travel Award   2016
  IEEE Conference on Data Mining
- AAAI Student Travel Award   2016
  AAAI Conference on Artificial Intelligence
- IEEE BigData Student Travel Award   2016
  IEEE Conference on Big Data

- Top 20 New Star in Data Mining 2016
  Microsoft Academic Search
- The inaugural Adobe Research Fellowship Finalist 2016
  Adobe Research
- ICDM Student Travel Award 2015
  IEEE Conference on Data Mining
- Dean Fellowship 2014
  Northeastern University
- Outstanding Graduate 2014
  Beijing Education Commission
- 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

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 ACTIVITIES

- **Associate Editor**

  ◊ IEEE Computational Intelligence Magazine (**IEEE CIM**)

- **Editorial Board**

  ◊ 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**

  ◊ Neural Information Processing Systems (**NeurIPS**)   2019
  ◊ SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**)   2019
  ◊ International Joint Conference on Artificial Intelligence (**IJCAI**)   2019

- ◇ IEEE Conference on Machine Learning (**ICML**) 2019
- ◇ IEEE Conference on Multimedia Information Processing and Retrieval (**MIPR**) 2019
- ◇ 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 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 Pattern Analysis and Machine Intelligence (**TPAMI**)
  - ◇ 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 Biomedical Engineering (**TBME**)
  - ◇ 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**)
  - ◇ ACM Transactions on the Web (**TW**)
  - ◇ Scientific Reports (**SR**)
  - ◇ 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**)
  - ◇ Mathematical Problems in Engineering (**MPE**)