

# 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, fair 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, label distribution drift
  - **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**
- INSTRUCTOR
    - ◇ *Computer Vision, Undergraduate & Graduate*, Spring 2021
    - ◇ *Introduction to Data Mining, Undergraduate & Graduate*, Fall 2018, Spring 2020
    - ◇ *Data Structure, Undergraduate*, Fall 2019
    - ◇ *Introduction to Big Data, Undergraduate & Graduate*, Spring 2019, Fall 2020
    - ◇ *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 Citations: 1494; H-index: 23, i10-index: 37 by Google Scholar, June. 2021**

### • JOURNAL PAPERS

◇ 2 **TPAMI**, 5 **TKDE**, 1 **DMKD**, 2 **TKDD**, 1 **BMC**, 1 **TFS**, 2 **TIP**, 1 **TNNLS**

1. Mingyu Wan\*, Han Yue\*, Jaime Notarangelo, **Hongfu Liu** and Fanglin Che. Deep Learning Assisted Investigation of Electric Field-Dipole Effects on Catalytic Ammonia Synthesis. *Journal of the American Chemical Society Au (JACS Au)*, 2022.
2. Wenguang Wang, Wenhong Wang and **Hongfu Liu**. Correlation Guided Ensemble Clustering for Hyperspectral Band Selection. *Remote Sensing (RS)*, 2022.
3. Zihao Wang, Kun Li, Steve Xia and **Hongfu Liu**. Economic Recession Prediction Using Deep Neural Network. *The Journal of Financial Data Science (JFDS)*, 2021.
4. Han Yue, **Hongfu Liu**, and Jian Chen. A Gospel for MOBA Game: Ranking-Preserved Hero Change Prediction in Dota 2. *IEEE Transactions on Games (TG)*, 2021.
5. Kai Li, **Hongfu Liu**, Yulun Zhang, Kunpeng Li and Yun Fu. Self-guided Deep Multi-view Subspace Clustering via Consensus Affinity Regularization. *IEEE Transactions on Cybernetics (TC)*, 2021.
6. Hangyu Du, Feng Chen (Co-first author), **Hongfu Liu** and Pengyu Hong. Network-based Virus-Host Interaction Prediction with Application to SARS-CoV-2. *Patterns*, 2021.
7. Xiaochen Lv, Wenhong Wang and **Hongfu Liu**. Cluster-Wise Weighted NMF for Hyperspectral Images Unmixing with Imbalanced Data. *Remote Sensing (RS)*, 2021.
8. Jun Li, **Hongfu Liu**, Zhiqiang Tao, Handong Zhao and Yun Fu. Learnable Subspace Clustering. *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 2020.
9. Wenhong Wang and **Hongfu Liu**. Deep Nonnegative Dictionary Factorization for Hyperspectral Unmixing. *Remote Sensing (RS)*, 2020.
10. Wenhong Wang, Yuntao Qian and **Hongfu Liu**. Multiple Clustering Guided Non-negative Matrix Factorization for Hyperspectral Unmixing. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)*, 2020.
11. Xue Li, **Hongfu Liu** and Bin Zhu. Evolutive Preference Analysis with Online Consumer Ratings. *Information Science (IS)*, 2020.
12. **Hongfu Liu**, Jun Li, Yue Wu and Yun Fu. Clustering with Outlier Removal. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2019.
13. Zhiqiang Tao, **Hongfu Liu**, Huazhu Fu and Yun Fu. Multi-View Saliency-Guided Clustering for Image Cosegmentation. *IEEE Transactions on Image Processing (TIP)*, 2019.
14. Weiren Yu, Zhengming Ding, Chunming Hu and **Hongfu Liu**. Knowledge Reused Outlier Detection. *IEEE Access*, 2019.
15. 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)*, 2019.
16. 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.
17. **Hongfu Liu**, Ming Shao and Yun Fu. Feature Selection with Unsupervised Consensus Guidance. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2018.
18. 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.

19. Yue Wu, **Hongfu Liu**, Jun Li and Yun Fu. Improving Face Representation Learning with Center Invariant Loss. *Image and Vision Computing (IVC)*, 2018.
20. **Hongfu Liu**, Ming Shao, Zhengming Ding and Yun Fu. Structure-Preserved Unsupervised Domain Adaptation. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2018.
21. 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.
22. **Hongfu Liu** and Yun Fu. Consensus Guided Multi-View Clustering. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 2018.
23. Xue Li and **Hongfu Liu**. Greedy Optimization for K-means-based Consensus Clustering. *Tsinghua Science and Technology (TST)*, 2018.
24. **Hongfu Liu**, Zhiqiang Tao and Yun Fu. Partition Level Constrained Clustering. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2017.
25. **Hongfu Liu**, Ming Shao, Sheng Li and Yun Fu. Infinite Ensemble Clustering. *Data Mining and Knowledge Discovery (DMKD)*, 2017.
26. **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.
27. **Hongfu Liu**, Rui Zhao, Hongsheng Fang, Feixiong Chen, Yun Fu and Yuyang Liu. Entropy-based Consensus Clustering for Patient Stratification. *Bioinformatics (BMC)*, 2017.
28. Handong Zhao, **Hongfu Liu**, Zhengming Ding and Yun Fu. Consensus Regularized Multi-View Outlier Detection. *IEEE Transactions on Image Processing (TIP)*, 2017.
29. 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.
30. 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.
31. Junjie Wu, Shiwei Zhu, **Hongfu Liu** and Guoping Xia. Cosine Interesting Pattern Discovery. *Information Sciences (IS)*, 2012.

- CONFERENCE PAPERS

- ◇ 5 **KDD**, 4 **ICDM**, 1 **SDM**, 1 **ICLR**, 1 **NeurIPS**, 1 **ICML**, 4 **CVPR**, 1 **ICCV**, 5 **IJCAI**, 5 **AAAI**, 2 **CIKM**, 3 **IEEE BigData**, 1 **HPCC**, 1 **ICSSM Best Paper**

  1. Han Yue, Steve Xia and **Hongfu Liu**. Multi-task Envisioning Transformer-based Autoencoder for Corporate Credit Rating Migration Early Prediction. *In Proceedings of ACM SIGKDD International Conference on Knowledge Discovery and Data mining (KDD)*, 2022.
  2. Peizhao Li and **Hongfu Liu**. Achieving Fairness at No Utility Cost via Data Reweighting. *In Proceedings of International Conference on Machine Learning (ICML)*, 2022.
  3. Peizhao Li, Pu Wang, Karl Berntorp and **Hongfu Liu**. Exploiting Temporal Relations on Radar Perception for Autonomous Driving. *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
  4. Songyao Jiang, **Hongfu Liu**, Yue Wu and Yun Fu. Spatially Constrained GAN for Face and Fashion Synthesis. *In Proceeding of IEEE International Conference on Automatic Face and Gesture Recognition (FG)*, 2021.
  5. Wenxiao Xiao, Zhengming Ding and **Hongfu Liu**. Implicit Semantic Response Alignment for Partial Domain Adaptation. *In Proceeding of Neural Information Processing Systems (NeurIPS)*, 2021.
  6. Xiaoying Xing, **Hongfu Liu**, Chen Chen and Jundong Li. Fairness-Aware Unsupervised Feature Selection. *In Proceeding of ACM International Conference on Information and Knowledge Management (CIKM)*, 2021.

7. Taotao Jing, **Hongfu Liu** and Zhengming Ding. Towards Novel Target Discovery Through Open-Set Domain Adaptation. *In Proceedings of International Conference on Computer Vision (ICCV)*, 2021.
8. Hanyu Song, Peizhao Li and **Hongfu Liu**. Deep Clustering-based Fair Outlier Detection. *In Proceedings of ACM SIGKDD International Conference on Knowledge Discovery and Data mining (KDD)*, 2021.
9. Peizhao Li, Jiuxiang Gu, Jason Kuen, Vlad Morariu, Handong Zhao, Rajiv Jain, Varun Manjunatha and **Hongfu Liu**. SelfDoc: Self-Supervised Document Representation Learning. *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
10. Peizhao Li, Yifei Wang, Han Zhao, Pengyu Hong and **Hongfu Liu**. On Dyadic Fairness: Exploring and Mitigating Bias in Graph Connections. *In Proceedings of International Conference on Learning Representations (ICLR)*, 2021.
11. Peizhao Li, Han Zhao and **Hongfu Liu**. Deep Fair Clustering in Visual Learning. *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.
12. Zhiqiang Tao, **Hongfu Liu**, Jun Li and Yun Fu. Adversarial Graph Embedding for Ensemble Clustering. *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, 2019.
13. 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.
14. 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.
15. **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.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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)
21. Zhiqiang Tao, **Hongfu Liu** and Yun Fu. Simultaneous Clustering and Ensemble. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2017.
22. 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.
23. **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.
24. **Hongfu Liu**, Haiyi Mao and Yun Fu. Robust Multi-View Feature Selection. *In Proceedings of IEEE International Conference on Data Mining (ICDM)*, 2016.

25. **Hongfu Liu**, Ming Shao and Yun Fu. Structure-Preserved Multi-Source Domain Adaptation. *In Proceedings of IEEE International Conference on Data Mining (ICDM)*, 2016.
26. **Hongfu Liu**, Ming Shao and Yun Fu. Consensus Guided Unsupervised Feature Selection. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI)*, 2016.
27. **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.
28. 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.
29. Handong Zhao, **Hongfu Liu** and Yun Fu. Incomplete Multi-modal Visual Data Grouping. *In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI)*, 2016.
30. **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)
31. **Hongfu Liu** and Yun Fu. Clustering with Partition Level Side Information. *In Proceedings of IEEE International Conference on Data Mining (ICDM)*, 2015.
32. **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.
33. **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.
34. **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.
35. **Hongfu Liu**, Yuchao Zhang and Xue Li. Consensus Ranking From a Utility View. *In Proceeding of International Conference on Natural Computation (ICNC)*, 2013.
36. 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.
37. 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.
38. 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.
39. 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.
40. Yuchao Zhang, **Hongfu Liu** and Bo Deng. Evolutionary Clustering with DBSCAN. *In Proceeding of International Conference on Natural Computation (ICNC)*, 2013.
41. 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. Peizhao Li, Xuchao Zhang, Ziyu Yao, Wei Cheng, Haifeng Chen and **Hongfu Liu**. Code Editing from Few Exemplars by Adaptive Multi-Extent Composition. *In International Conference on Learning Representations Deep Learning For Code Workshop (ICLRW)*, 2022.

2. 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.
3. 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

- Nikolaos Vlassis and **Hongfu Liu**. *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.

## Fund

- MERL Gift Grant 2022-2022  
*MERL, PI, \$5,000*
- Graph-Learning-Assisted State and Event Tracking for Solar-Penetrated Power Grids with Heterogeneous Data Sources 2021-2024  
*Department of Energy, Co-PI, \$145,000*
- Machine Learning for Credit Investigation 2019-2023  
*Guardian Life Insurance, PI, \$230,000*
- Provost Research Grant 2019-2020  
*Brandeis, PI, \$23,739*
- Adobe Gift Grant 2019-2020  
*Adobe, PI, \$20,000*
- Theodore and Jane Norman Fund 2019  
*Brandeis, PI, \$3,278*
- Teaching Innovation Grant 2019  
*Brandeis, PI, \$8,144*

## HONORS & AWARDS

- Top Reviewer 2022  
*Uncertainty in Artificial Intelligence*
- Global Top Young Chinese Scholars in AI (Top 25 in Data Mining Area) 2022  
*Baidu Scholar*
- Highlighted Area Chair 2022  
*International Conference on Learning Representations*
- INNS 2021 Aharon Katzir Young Investigator Award 2021  
*Board of Governors of the International Neural Network Society*
- Best Student Paper 2021  
*Automatic Face and Gesture Recognition*
- Outstanding Self-Financed Students Abroad 2018  
*Chinese Government Award*
- First Place Award in MS-Celel-1M Grand Challenge 2017  
*International Conference on Computer Vision*

## PROFESSIONAL ACTIVITIES

- **Associate Editor**
  - ◇ IEEE Computational Intelligence Magazine (**IEEE CIM**) 2019 - 2022
- **Area Chair**
  - ◇ Neural Information Processing Systems (**NeurIPS**) 2022
  - ◇ International Conference on Learning Representations (**ICRL**) 2021