

Juhua Hu

Curriculum Vitae

School of Engineering and Technology
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Education

- 2012.09–2017.12 **Ph.D., Computer Science**, *Simon Fraser University*, Burnaby, Canada.
Supervisor: Prof. Jian Pei
Dissertation: *Subspace Clustering Methods for Understandable Information Organization*
- 2009.09–2012.06 **M.Sc., Computer Science**, *LAMDA, Nanjing University*, Nanjing, China.
Advisors: Prof. Yuan Jiang and Prof. Zhi-Hua Zhou
Thesis: *Research on Machine Learning Methods by Using Implicit Constraints*
- 2005.09–2009.06 **B.Sc., Computer Science**, *Nanjing University*, Nanjing, China.
Graduated with Honors.

Employment

- 2024.09–Present **Associate Professor**, *University of Washington*, Tacoma, WA, USA.
- 2018.09–2024.08 **Assistant Professor**, *University of Washington*, Tacoma, WA, USA.
- 2018.03–2018.07 **Machine Learning Engineer**, *KW Labs Ltd, Ever AI*, Vancouver, BC, Canada.
- 2016.03–2018.08 **Data Scientist**, *GeNA Lab, Simon Fraser University*, Burnaby, BC, Canada.

UW Committees/Duties/Service

- 2024.09–Present **Graduate School Council Member**, *University of Washington*.
- 2020.01–Present **Director**, *Center for Data Science*, Computer Literacy Seminars, CDS Research Seminars, Data Science Certificate, Women in Data Science Tacoma @ UW Tacoma, CDS/Industry Data Science Capstone Program.
- 2018.09–Present **Computer Science and Systems Undergraduate and Graduate Committee**, *School of Engineering and Technology*.
- 2023.11–2024.03 **SET Research Showcase Committee**, *School of Engineering and Technology*.
- 2023.09–2024.04 **Tenure Track Faculty Search Committee Member**, *Information Technology*, *School of Engineering and Technology*.
- 2022.09–2023.05 **Tenure Track Faculty Search Committee Member**, *Computer Science and Systems*, *School of Engineering and Technology*.
- 2022.10–2022.11 **Proposal Reviewer**, *UW Royalty Research Fund*.
- 2022.02–2022.02 **Master Syllabus Revision Team Member**, *TCSS 422 Computer Operating Systems*, *School of Engineering and Technology*.

Research Interests

Subspace mining feature transformation, dimensionality reduction, and feature selection

Unsupervised	clustering, multi-clustering, especially deep clustering
Supervised	deep representation learning, deep model interpretation, deep model compression, distance metric learning, time-series forecasting, and time-series classification
Applications	Computer Vision, Healthcare, and Smart City

Grants and Projects

Current

2023.07–2024.12 Co-PI in “PFI-TT: Smart City Curbside Parking Management”, NSF, 250,000 USD

Past

2021.05–2024.05 PI in “CRII: III: Rare Event Prediction in Time Series”, NSF, 174,850 USD

2020.01–2022.12 PI in “Sequential Modeling and Imaging AI in Healthcare”, KenSci/Advata, 210,000 USD

2019.04–2023.04 PI in “Student Travel Grant of KDD’19, KDD’20’, and KDD’22’, NSF, 20,000 USD

2022.10–2023.03 Co-PI in “Smart Curbside Parking Inventory Management”, City of Las Vegas, 5,000 USD

2020.06–2022.06 Co-PI in “I-Corps™ Teams”, NSF, 50,000 USD

2018.10–2020.10 Co-PI in “Data Analytics for Cybersecurity”, Infoblox, 240,000 USD

Publications

Refereed Journal Articles

- [PCS23] Jiawei Yao^{Student}, Enbei Liu^{Student}, Maham Rashid^{Student}, and Juhua Hu. **AugDMC: Data augmentation guided deep multiple clustering**. *Procedia Computer Science (PCS)*, 222(2023): 571-580, 2023.
- [KAIS18] Juhua Hu and Jian Pei. **Subspace multi-clustering: A review**. *Knowledge and Information Systems (KAIS)*, 56(2): 257-284, 2018.
- [KAIS17] Juhua Hu, Qi Qian, Jian Pei, Rong Jin and Shenghuo Zhu. **Finding multiple stable clusterings**. *Knowledge and Information Systems (KAIS)*, 51(3): 991-1021, 2017.
- [TKDD15] Juhua Hu, De-Chuan Zhan, Xintao Wu, Yuan Jiang and Zhi-Hua Zhou. **Pair-wise specific distance learning from physical linkages**. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 9(3): Article 20, 2015.
- [JCRD13] Juhua Hu, Yuan Jiang and Zhi-Hua Zhou. **A co-training method based on teaching-learning model**. *Journal of Computer Research and Development*, 50(11): 2262–2268, 2013. (Best Student Paper Award in 2012 National Conference on Agent Theory and Applications, in Chinese with English abstract.)

Conference Papers

- [BMVC24] Richard Franklin^{Student}, Jiawei Yao^{Student}, Deyang Zhong^{Student}, Qi Qian, and Juhua Hu. **Text-Guided Mixup Towards Long-Tailed Image Categorization**. To appear in: Proceedings of the 35th British Machine Vision Conference (BMVC'24), Glasgow, UK, 2024.
- [ECCV24a] Qi Qian and Juhua Hu. **Online Zero-Shot Classification with CLIP**. To appear in: Proceedings of the 18th European Conference on Computer Vision (ECCV'24), Milan, Italy, 2024.
- [ECCV24b] Qi Qian, Yuanhong Xu, and Juhua Hu. **SeA: Semantic Adversarial Augmentation for Last Layer Features from Unsupervised Representation Learning**. To appear in: Proceedings of the 18th European Conference on Computer Vision (ECCV'24), Milan, Italy, 2024.
- [CVPR24] Jiawei Yao^{Student}, Qi Qian, and Juhua Hu. **Multi-Modal Proxy Learning Towards Personalized Visual Multiple Clustering**. To appear in: Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR'24), Seattle, WA, 2024, pp.14066-14075.
- [MDM24] Jiayu Li^{Student}, Hanming Zhang^{Student}, Juhua Hu, and Wei Cheng. **Curbside Parking Occupancy Detection**. In: Proceedings of the IEEE International Conference on Mobile Data Management (MDM'24), Brussels, Belgium, 2024, pp.219-226. (Best Industry and Application Paper Runner-up Award)
- [MOST24] Jiayu Li^{Student}, Yin Jin^{Student}, Deyang Zhong^{Student}, Juhua Hu, and Wei Cheng. **Efficiently Build An Accurate Curbside Parking Rule Database on Edge**. In: Proceedings of the IEEE International Conference on Mobility: Operations, Services, and Technologies (MOST'24), Dallas, TX, 2024, pp.72-82.
- [SDM24] Jiawei Yao^{Student} and Juhua Hu. **Dual-disentangled Deep Multiple Clustering**. In: Proceedings of the SIAM International Conference on Data Mining (SDM'24, acceptance rate of 99/415=23.9%), Houston, TX, 2024, pp.679-687. (NSF Early Career Travel Award)
- [BigData23] Tucker Stewart^{Student}, Katherine Stern, Grant O'Keefe, Ankur Teredesai, and Juhua Hu. **NPRL: Nightly Profile Representation Learning for Early Sepsis Onset Prediction in ICU Trauma Patients**. In: Proceedings of the IEEE International Conference on Big Data (BigData'23), Sorrento, Italy, 2023, pp.1843-1852.
- [NeurIPS23] Qi Qian, Yuanhong Xu, and Juhua Hu. **Intra-modal proxy learning for zero-shot visual categorization with CLIP**. In: Advances in Neural Information Processing Systems 36 (NeurIPS'23), New Orleans, LA, 2023.
- [BMVC23] Deyang Zhong^{Student}, Jiayu Li^{Student}, Wei Cheng, and Juhua Hu. **Dictionary-guided text recognition for smart street parking**. In: Proceedings of the 34th British Machine Vision Conference (BMVC'23), Aberdeen, UK, 2023.
- [ICCV23] Junyang Wang^{Student}, Yuanhong Xu, Juhua Hu, Ming Yan, Jitao Sang, and Qi Qian. **Improved visual fine-tuning with natural language supervision**. In: Proceedings of the International Conference on Computer Vision (ICCV'23), Paris, France, 2023, pp.11899-11909. (Oral)

- [IMECE23] Solmaz S. Monir^{Student}, Juhua Hu, Ben Tribelhorn, and Heather E. Dillon. **Enhanced chaotic transition prediction using hierarchical clustering for the Lorenz System**. In: Proceedings of the ASME 2023 International Mechanical Engineering Congress and Exposition (IMECE'23), Volume 10: Heat Transfer and Thermal Engineering, New Orleans, LA, 2023, pp.V010T11A065.
- [HIMS23] Kevin Ewig^{Student}, Xiangwen Lin^{Student}, Tucker Stewart^{Student}, Katherine Stern, Grant O'Keefe, Ankur Teredesai, and Juhua Hu. **Multi-subset approach to early sepsis prediction**. In: Proceedings of the 2023 Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE'23), Las Vegas, NV, 2023, pp.1335-1341.
- [BigData22] Ankur Teredesai, Sijin Huang^{Student}, Tucker Stewart^{Student}, Juhua Hu, Armaan Thakker^{HighSchoolStudent}, Katherine Stern, and Grant O'Keefe. **Sub-Sequence graph representation learning on high variability data for dynamic risk prediction in critical care**. In: Proceedings of the IEEE International Conference on Big Data (BigData'22), Osaka, Japan, 2022, pp.2082-2092.
- [AI4AD22] Hieu Chau^{Student}, Yin Jin^{Student}, Jiayu Li^{Student}, Juhua Hu and Wei Cheng. **Real-time street parking sign detection and recognition**. In: IJCAI-ECAI 2022 AI4AD (Artificial Intelligence for Autonomous Driving) Workshop, Vienna, Austria, 2022.
- [CVPR22] Qi Qian, Yuanhong Xu, Juhua Hu, Hao Li, and Rong Jin. **Unsupervised visual representation learning by online constrained k-means**. In: Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR'22, acceptance rate of 2,067/8,161=25.3%), New Orleans, LA, 2022, pp.16640-16649.
- [SDM22] Qi Qian, Hao Li, and Juhua Hu. **Improved knowledge distillation via full kernel matrix transfer**. In: Proceedings of the SIAM International Conference on Data Mining (SDM'22), virtual, 2022, pp.612-620. (acceptance rate: 83/298=27.8%, SIAM Early Career Travel Award)
- [ICCV21] Yuanhong Xu, Qi Qian, Hao Li, Rong Jin and Juhua Hu. **Weakly supervised representation learning with coarse labels**. In: Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV'21, acceptance rate: 1,617/6,236=25.9%), virtual, 2021, pp.10593-10601.
- [ICHI21] Christine Allen^{Student}, Juhua Hu, Vikas Kumar, Muhammad Ahmad and Ankur Teredesai. **Interpretable phenotyping for electronic health records**. In: Proceedings of the IEEE International Conference on Healthcare Informatics (ICHI'21), Victoria, Canada, 2021, pp.161-170.
- [CSR21] Ruichao Zhang^{Student}, Shang Wang^{Student}, Renee Burton, Minh Hoang, Juhua Hu, Anderson Nascimento. **Clustering analysis of email malware campaigns**. In: Proceedings of the IEEE International Conference on Cyber Security and Resilience (CSR'21), virtual 2021, pp.95-102.
- [CVPR20] Qi Qian, Juhua Hu, and Hao Li. **Hierarchically robust representation learning**. In: Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR'20, acceptance rate: 1,470/6,656=22%), Seattle, WA, 2020, pp.7336-7344.

- [BigData19] Bin Yu, Giovanna Graciani^{Student}, Anderson Nascimento, and Juhua Hu. **Cost-adaptive neural networks for peak volume prediction with EMM filtering**. In: Proceedings of the IEEE International Conference on Big Data (BigData'19), Los Angeles, CA, 2019, pp.4208-4213.
- [ICCV19] Qi Qian, Lei Shang, Baigui Sun, Juhua Hu, Hao Li, and Rong Jin. **SoftTriple loss: Deep metric learning without triplet sampling**. In: Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV'19, acceptance rate: 1,077/4,303=25%), Seoul, Korea, 2019, pp.6450-6458.
- [KDD18] Lingyang Chu, Xia Hu, Juhua Hu, Lanjun Wang, and Jian Pei. **Exact and consistent interpretation for piecewise linear neural networks: A closed form solution**. In: Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD'18, acceptance rate: 107/983=10.9%), London, UK, 2018, pp.1244-1253.
- [ICDM15] Juhua Hu, Qi Qian, Jian Pei, Rong Jin and Shenghuo Zhu. **Finding multiple stable clusterings**. In: Proceedings of the IEEE International Conference on Data Mining (ICDM'15), Atlantic City, NJ, 2015, pp.171-180. (acceptance rate: 68/810=8.4%, 'Bests of ICDM 2015', and Student Travel Award)
- [KDD14] Qi Qian, Juhua Hu, Rong Jin, Jian Pei and Shenghuo Zhu. **Distance metric learning using dropout: A structured regularization approach**. In: Proceedings of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD'14, acceptance rate: 151/1,036=14.6%), New York, NY, 2014, pp.323-332.
- [SDM14] Juhua Hu, Jian Pei and Jie Tang. **How can I index my thousands of photos effectively and automatically? An unsupervised feature selection approach**. In: Proceedings of the SIAM International Conference on Data Mining (SDM'14), Philadelphia, PA, 2014, pp.136-144. (acceptance rate:60/389=15.4%, Student Travel Award)
- [AAAI12] Yu-Feng Li, Ju-Hua Hu, Yuan Jiang and Zhi-Hua Zhou. **Towards discovering what patterns trigger what labels**. In: Proceedings of the 26th AAAI Conference on Artificial Intelligence (AAAI'12, acceptance rate: 294/1,129=26%), Toronto, Canada, 2012, pp.1012-1018.

Newsletters

- [Li21] Jiayu Li^{Student}, Putthida Samrith^{Student}, Nicole Guobadia^{Student}, Juhua Hu and Wei Cheng. **Automatic street parking sign reading**. IEEE IOT-AHSN TC Newsletter, 1(14): 3-4, 2021.
- [Fotouhi21] Mohammadbagher Fotouhi^{Student}, Ghazaleh Jowkar^{Student}, Tongjue Wang^{Student}, Juhua Hu, Payman Arabshahi and Wei Cheng. **EMG sensor based finger movement detection**. IEEE IOT-AHSN TC Newsletter, 1(14): 11-12, 2021.

Honors and Awards

- 2024.06 **Best Industry and Application Paper Runner-up Award, MDM'24.**
 ○ Curbside Parking Occupancy Detection

- 2024.02 **NSF Early Career Travel Award**, *SDM'24*.
- 2022.03 **SIAM Early Career Travel Award**, *SDM'22*.
- 2015.11 **Borden Ladner Gervais Graduate Scholarship**, *Simon Fraser University*.
- 2015.11 **Travel and Minor Research Award**, *Simon Fraser University*.
- 2015.10 **Student Travel Award**, *ICDM'15*.
- 2015.09 **Bests of ICDM 2015**, *ICDM'15*.
 - Finding multiple stable clusterings
- 2015.08 **Graduate Fellowship**, *Simon Fraser University*.
- 2015.08 **Graduate Prize in Computing Science**, *Simon Fraser University*.
- 2014.11 **Helmut & Hugo Eppich Family Graduate Scholarship**, *Simon Fraser University*.
- 2014.11 **Travel and Minor Research Award**, *Simon Fraser University*.
- 2014.06 **Graduate Fellowship**, *Simon Fraser University*.
- 2014.03 **Student Travel Award**, *SDM'14*.
- 2014.03 **Travel and Minor Research Award**, *Simon Fraser University*.
- 2013.11 **Robar Industries Limited Graduate Scholarship**, *Simon Fraser University*.
- 2013.07 **Outstanding Master Thesis of Jiangsu Province**, *Nanjing University*.
- 2012.08 **Best Student Paper Award**, *2012 National Conference on Agent Theory and Applications*, Changchun, China.
 - A co-training method based on teaching-learning model
- 2012.07 **Outstanding Master Thesis of Computer Science and Technology Nomination Award**, *Nanjing University*.
- 2008.12 **Outstanding Graduate**, *Nanjing University*.
- 2008.11 **TF–NUS LEaRN Award**, *National University of Singapore*.

Professional Experience

Tutorials

- PAKDD'21 **Fairness in Healthcare Machine Learning: A Practical Guide**, *worked on part of the tutorial*.
- IEEE ICHI'21 **Fairness in Healthcare AI**, *worked on part of the tutorial*.

Talks

- 2024.06 **2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition**, *Seattle, WA*, *Poster presentation*.
- 2023.07 **2023 Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE) – the 9th International Conference on Health Informatics and Medical Systems (HIMS'23)**, *Oral presentation over zoom*, *Multi-Subset Approach to Early Sepsis Prediction*.
- 2023.05 **Discovering AI@UW 2023**, *1 minute presentation*, *Rare Event Prediction in Time Series*.
- 2023.02 **Weyerhaeuser**, *Oral presentation*, *Event Prediction Using Temporal Trend*.

- 2023.02 **Women in Computing Sciences Seminar**, *Oral presentation*, Data Science.
- 2022.04 **2022 SIAM International Conference on Data Mining [Virtual]**, *Oral presentation*.
- 2020.06 **2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition, Seattle, WA [Virtual]**, *Poster presentation*.
- 2019.04 **KenSci**, *Oral presentation*, Understandable Information Organization.
- 2018.10 **Infoblox**, *Oral presentation*, Understandable Information Organization.
- 2018.03 **University of Washington Tacoma**, *Understandable Information Organization*.
- 2015.11 **2015 IEEE International Conference on Data Mining, Atlantic City, NJ**, *Oral presentation*.
- 2014.08 **2014 SIGKDD Conference on Knowledge Discovery and Data Mining, New York, NY**, *Oral presentation*.
- 2014.05 **NSERC-Applied Sciences Industry Networking Event**, *Poster Presentation*.
- 2014.04 **2014 SIAM International Conference on Data Mining, Philadelphia, PA**, *Oral Presentation*.
- 2012.08 **2012 National Conference on Agent Theory and Applications, Changchun, China**, *Oral presentation*.

Teaching

- TCSS 551 **Big Data Analytics**, UNIVERSITY OF WASHINGTON | TACOMA, Autumn 2023, Autumn 2022, Autumn 2021, Spring 2021, Spring 2020, Winter 2020, Spring 2019, Autumn 2018.
- TCSS 422 **Computer Operating Systems**, UNIVERSITY OF WASHINGTON | TACOMA, Winter 2024, Autumn 2023, Winter 2023, Autumn 2022, Spring 2022, Winter 2022, Winter 2021, Autumn 2020, Spring 2020, Winter 2020, Spring 2019.
- CMPT454 **Database Systems II**, SIMON FRASER UNIVERSITY | BURNABY, Fall 2017.
- CMPT354 **Database Systems I**, SIMON FRASER UNIVERSITY | SURREY, Fall 2014.

NSF Panel

- III **CAREER Machine Learning and Data Mining Panel**, 2020.

Organizing Committee

- ASONAM **Workshop Co-Chairs**, *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*, 2021.
- KDD **Student Travel Awards Chair**, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, 2020, 2019.
- WiDS **Organizer**, *WiDS Tacoma @ UW Tacoma*, 2023, 2022, 2021.

Best Poster Award Committee

- SDM **The SIAM International Conference on Data Mining**, 2024.

Session Chair

- SDM **The SIAM International Conference on Data Mining**, 2024.

- KDD **ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 2019.**
[International Program Committee Member](#)
- CVPR **IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2024, 2023, 2022, 2021.**
- ICCV **IEEE/CVF International Conference on Computer Vision, 2023, 2021.**
- ECCV **IEEE/CVF European Conference on Computer Vision, 2024, 2022.**
- ACCV **Asian Conference on Computer Vision, 2024.**
- KDD **ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 2024, 2022, 2021, 2020, 2016.**
- VLDB **International Conference on Very Large Databases, 2023.**
- ICML **The International Conference on Machine Learning, 2019.**
- NeurIPS **The Conference on Neural Information Processing Systems, 2024, 2019, 2018.**
- ICLR **The International Conference on Learning Representations, 2021, 2020, 2019.**
- AAAI **The AAAI Conference on Artificial Intelligence, 2024, 2021, 2019, 2018, 2017.**
- IJCAI **The International Joint Conference on Artificial Intelligence, 2023, 2019, 2018.**
- CIKM **The ACM International Conference on Information and Knowledge Management , 2019.**
- SDM **The SIAM International Conference on Data Mining, 2024, 2023, 2022, 2021.**
- ACML **The Asian Conference on Machine Learning, 2024, 2023, 2022, 2021, 2020, 2019, 2018, 2017.**
- DASFAA **The International Conference on Database Systems for Advanced Applications, 2021, 2020, 2019, 2018.**
- PRICAI **The Pacific Rim International Conference on Artificial Intelligence, 2023, 2021, 2018, 2016.**
[Associate Editor](#)
- IDA **Intelligent Data Analysis.**
- SNAM **Social Network Analysis and Mining.**
[Topic Editor](#)
Insights in Data Science: 2021, *Frontiers in Big Data.*
[Editorial Board](#)
Frontiers in Big Data, *Data Science, Big Data Networks, Data Mining and Management, Medicine and Public Health.*

Journal Reviewer

- TPAMI **IEEE Transactions on Pattern Analysis and Machine Intelligence.**
- NN **Neural Networks.**
- TKDE **IEEE Transactions on Knowledge and Data Engineering.**
- KAIS **Knowledge and Information Systems.**
- TKDD **ACM Transactions on Knowledge Discovery from Data.**
- ML **Machine Learning.**
- DMKD **Data Mining and Knowledge Discovery.**
- CSR **Computer Science Review.**
- HISC **Health Information Science and Systems.**