

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

- 2018.09–Present **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.

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, Cybersecurity, HCI, and Smart City

Grants and Projects

- 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
- 2023.07–2024.12 Co-PI in “PFI-TT: Smart City Curbside Parking Management”, NSF, 250,000 USD
- 2023.01–2023.12 Co-PI in “Pilot Project on Building Street Parking Map”, 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. **Paired-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

- [BMVC23] Deyang Zhong^{Student}, Jiayu Li^{Student}, Wei Cheng, and Juhua Hu. **Dictionary-guided text recognition for smart street parking**. To appear 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**. To appear in: *Proceedings of the International Conference on Computer Vision (ICCV'23)*, Paris, France, 2023. (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**. To appear in: *Proceedings of ASME 2023, International Mechanical Engineering Congress and Exposition (IMECE'23)*, New Orleans, LA, 2023.
- [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**. To appear in: *Proceedings of the International Conference on Health Informatics and Medical Systems (HIMS'23)*, Las Vegas, NV, 2023.
- [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)
- [AAA12] 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

- 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

- 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 2022, Autumn 2021, Spring 2021, Spring 2020, Winter 2020, Spring 2019, Autumn 2018.

TCSS 422 **Computer Operating Systems**, UNIVERSITY OF WASHINGTON | TACOMA, 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.

[International Program Committee Member](#)

CVPR **IEEE/CVF Conference on Computer Vision and Pattern Recognition**, 2023, 2022, 2021.

ICCV **IEEE/CVF International Conference on Computer Vision**, 2023, 2021.

ECCV **IEEE/CVF European Conference on Computer Vision**, 2022.

KDD **ACM SIGKDD Conference on Knowledge Discovery and Data Mining**, 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**, 2019, 2018.

ICLR **The International Conference on Learning Representations**, 2021, 2020, 2019.

AAAI **The AAAI Conference on Artificial Intelligence**, 2023, 2021, 2019, 2018, 2017.

IJCAI **The International Joint Conference on Artificial Intelligence**, 2019, 2018.

CIKM **The ACM International Conference on Information and Knowledge Management**, 2019.

SDM **The SIAM International Conference on Data Mining**, 2023, 2022, 2021.

ACML **The Asian Conference on Machine Learning**, 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**, 2021, 2018, 2016.

[Associate Editor](#)

Social Network Analysis and Mining.

Topic Editor

Insights in Data Science: 2021, *Frontiers in Big Data*.

Editorial Board

Data Science, *Frontiers in Big Data*.

Big Data Networks, *Frontiers in Big Data*.

IDA **Intelligent Data Analysis**.

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**.