Guansong PANG

School of Computing and Information Systems
Singapore Management University (SMU)
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Education

PhD, University of Technology Sydney, Australia, 2019

Master of Philosophy, Monash University, Australia, 2015

Master of Philosophy, Guangdong University of Foreign Studies, China, 2013

Bachelor of Engineering, Guangdong University of Foreign Studies, China, 2010

Academic Appointments

Assistant Professor of Computer Science, School of Computing and Information Systems, SMU, Jan 2022 - Present

Research Fellow, Australian Institute for Machine Learning, Australia, Sep 2018 - Dec 2021

Awards and Honors

World's Top 2% Scientists (in both single-year & career-long categories), Stanford/Elsevier, 2025

IEEE TNNLS Outstanding Associate Editor Award 2025, IEEE Computational Intelligence Society, 2025

Lee Kong Chian Fellowship, SMU, 2024

World's Top 2% Scientists, Stanford/Elsevier, 2024

Most Influential KDD 2023 Papers, Paper Digest, 2024

The World's Top 2% Scientists, Stanford University, 2023, 2022

Best Paper Award (Applications Track), 10th IEEE International Conference on Data Science and Advanced Analytics (DSAA), 2023

UTS Chancellor's Award List (for outstanding PhD research), University of Technology Sydney (UTS), 2020

Professional Memberships

Member, Institute of Electrical and Electronics Engineers (IEEE), 2021

Member, Association for Computing Machinery (ACM), 2019

RESEARCH

Research Interests

His research investigates novel data mining and machine learning techniques, with a research theme focused on abnormal, rare, or unknown instance detection, and robust, generalized learning algorithms for creating trustworthy continual AI systems. He also explores safety-critical and commercially/scientifically-significant real-world applications, including network intrusion detection, fraud detection, person re-identification, early detection of diseases, learning from biomedicine data, defect detection, biometric anti-spoofing, hate/toxic speech detection, etc.

Research and Project Areas

Anomaly detection
Open-world learning (out-of-distribution detection, open-set recognition, long-tailed classification, continual learning, open-vocabulary learning, etc.)
Graph representation learning
Out-of-distribution generalization
Deep reinforcement learning for knowledge discovery

Publications

Journal Articles [Refereed]

OpenCIL: Benchmarking out-of-distribution detection in class incremental learning, by MIAO, Wenjun; PANG, Guansong; NGUYEN, Trong-Tung; FANG, Ruohuan; ZHENG, Jin; BAI, Xiao. (2026). *Pattern Recognition, 171* 1-17. https://doi.org/10.1016/j.patcog.2025.112163 (Published)

Deep learning for hate speech detection: A comparative study, by MALIK, Jitendra Singh; QIAO, Hezhe; PANG, Guansong; HENGEL, van den Hengel, Anton. (2025). *International Journal of Data Science and Analytics, 20* (4), 3053-3068. https://doi.org/10.1007/s41060-024-00650-6 (Published)

Deep graph anomaly detection: A survey and new perspectives, by HE, Qiao; TONG, Hanghang; AN, Bo; KING, Irwin; AGGARWAL, Charu; PANG, Guansong. (2025). *IEEE Transactions on Knowledge and Data Engineering, 37* (9), 5106-5126. https://doi.org/10.1109/TKDE.2025.3581578 (Published)

Securing foundation models: Failure cases, challenges, and the future, by NIU, Mengjia; ZHU, Jiawen; QIAO, Hezhe; HADDADI, Hamed; PANG, Guansong. (2025). *IEEE Intelligent Systems, 40* (5), 52-56. https://doi.org/10.1109/MIS.2025.3597124 (Published)

CoLeCLIP: Open-domain continual learning via joint task prompt and vocabulary learning, by LI, Yukun; PANG, Guansong; SUO, Wei; CHEN, Chenchen; XI, Yuling; LIU, Lingqiao; CHEN, Hao; LIANG, Guoqiang; WANG, Peng. (2025). *IEEE Transactions on Neural Networks and Learning Systems, 36* (8), 15137-15151. https://doi.org/10.1109/TNNLS.2025.3547882 (Published)

What are anomalies in a network?
, by TING, Kai Ming; ZHUANG, Zhong; PANG, Guansong; LIU, Zongyou; LIANG, Tianrun; ZHAO, Qiuran. (2025). *ACM Transactions on Knowledge Discovery from Data, 19* (6), 1-34. https://doi.org/10.1145/3723007 (Published)

Unsupervised recognition of unknown objects for open-world object detection, by FANG, Ruohuan; PANG, Guansong; MIAO, Wenjun; BAI, Xiao; ZHENG, Jin; NING, Xin. (2025). *IEEE Transactions on Neural Networks and Learning Systems, 36* (6), 11340-11354. https://doi.org/10.1109/TNNLS.2025.3559940 (Published)

Transforming urban dynamics: Harnessing large language models for smarter mobility, by XUE, Hao; JIN, Ming; PAN, Shirui; SALIM, Flora; PANG, Guansong. (2025). *IEEE Intelligent Systems, 40* (2), 5-7. https://doi.org/10.1109/MIS.2025.3544937 (Published)

Harnessing collective structure knowledge in data augmentation for graph neural networks, by MA, Rongrong; PANG, Guansong; CHEN, Ling. (2024). *Neural Networks, 180* 1-13. https://doi.org/10.1016/j.neunet.2024.106651 (Published)

Self-supervised learning for time series analysis : Taxonomy, progress, and prospects, by ZHANG Kexin; WEN, Qingsong; ZHANG, Chaoli; CAI, Rongyao; JIN, Ming; LIU, Yong; ZHANG, James Y., LIANG, Yuxuan; PANG, Guansong; SONG, Dongjin; PAN Shirui. (2024). *IEEE Transactions on Pattern Analysis and Machine Intelligence, 46* (10), 6775-6794. https://doi.org/10.1109/TPAMI.2024.3387317 (Published)

Calibrated one-class classification for unsupervised time series anomaly detection, by XU, Hongzuo; WANG, Yijie; JIAN, Songlei; LIAO, Qing; WANG, Yongjun; PANG, Guansong. (2024). *IEEE Transactions on Knowledge and Data Engineering, 36* (11), 5723-5736. https://doi.org/10.1109/TKDE.2024.3393996 (Published)

A deep learning method to predict bacterial ADP-ribosyltransferase toxins, by ZHENG, Dandan; ZHOU, Siyu; CHEN, Lihong; PANG, Guansong; YANG, Jian. (2024). *Bioinformatics, 40* (7), 1-12. https://doi.org/10.1093/bioinformatics/btae378 (Published)

Learning adversarial semantic embeddings for zero-shot recognition in open worlds, by LI, Tianqi; PANG, Guansong; BAI, Xiao; ZHENG, Jin; ZHOU, Lei; NING, Xin. (2024). *Pattern Recognition, 149* 1-16. https://doi.org/10.1016/j.patcog.2024.110258 (Published)

Affinity uncertainty-based hard negative mining in graph contrastive learning, by NIU, Chaoxi; PANG, Guansong; CHEN, Ling. (2024). *IEEE Transactions on Neural Networks and Learning Systems, 35* (9), 1-11. https://doi.org/10.1109/TNNLS.2023.3339770 (Published)

Self-supervised pseudo multi-class pre-training for unsupervised anomaly detection and segmentation in medical images, by TIAN, Yu; LIU, Fengbei; PANG, Guansong; CHEN, Yuanhong; LIU, Yuyuan; VERJANS, Johan W.; SINGH, Rajvinder; CARNEIRO, Gustavo. (2023). *Medical Image Analysis, 90* 1-11. https://doi.org/10.1016/j.media.2023.102930 (Published)

Deep isolation forest for anomaly detection, by XU, Hongzuo; PANG, Guansong; WANG, Yijie; WANG, Yongjun. (2023). *IEEE Transactions on Knowledge and Data Engineering, 35* (12), 12591-12604. https://doi.org/10.1109/TKDE.2023.3270293 (Published)

RoSAS: Deep semi-supervised anomaly detection with contamination-resilient continuous supervision, by XU, Hongzuo; WANG, Yijie; PANG, Guansong; JIAN, Songlei; LIU, Ning; WANG, Yongjun. (2023). *Information Processing and Management, 60* (5), 1-17. https://doi.org/10.1016/j.ipm.2023.103459 (Published)

MIRROR: Mining Implicit Relationships via Structure-Enhanced Graph Convolutional Networks, by LIU, Jiaying; XIA, Feng; REN, Jing; XU, Bo; PANG, Guansong; CHI, Lianhua. (2023). *ACM Transactions on Knowledge Discovery from Data, 17* (4), 1-24. https://doi.org/10.1145/3564531 (Published)

An efficient annealing-assisted differential evolution for multi-parameter adaptive latent factor analysis, by LI, Qing; PANG, Guansong; SHANG, Mingsheng. (2022). *Journal Of Big Data, 9* (1), 1-18. https://doi.org/10.1186/s40537-022-00638-8 (Published)

Artificial Intelligence for Natural Disaster Management, by PANG, Guansong. (2022). *IEEE Intelligent Systems, 37* (6), 3-6. https://doi.org/10.1109/MIS.2022.3220061 (Published)

Joint hyperbolic and Euclidean geometry contrastive graph neural networks, by XU, Xiaoyu; PANG, Guansong; WU, Di; SHANG, Mingsheng. (2022). *Information Sciences: Informatics and Computer Science Intelligent Systems Applications, 609* 799-815. http://doi.org/10.1016/j.ins.2022.07.060 (Published)

Beyond Triplet Loss: Person Re-Identification With Fine-Grained Difference-Aware Pairwise Loss, by YAN, Cheng; PANG, Guansong; BAI, Xiao; LIU, Changhong; NING, Xin; ZHOU, Jun. (2022). *IEEE Transactions on Multimedia, 24* 1665-1677. http://doi.org/10.1109/TMM.2021.3069562 (Published)

Viral Pneumonia Screening on Chest X-Rays Using Confidence-Aware Anomaly Detection, by ZHANG, Jianpeng; XIE, Yutong; PANG, Guansong; LIAO, Zhibin; VERJANS, Johan; LI, Wenxing; SUN, Zongji; HE, Jian; LI, Yi; SHEN, Chunhua; XIA, Yong. (2021). *IEEE Transactions on Medical Imaging, 40* (3), 879-890. https://arxiv.org/pdf/2003.12338.pdf (Published)

Deep Learning for Anomaly Detection: A Review, by PANG, Guansong; SHEN, Chunhua; CAO, Longbing; VAN DEN HENGEL, Anton. (2021). *ACM Computing Surveys, 54* (2), 1-38. https://doi.org/10.1145/3439950 (Published)

Homophily outlier detection in non-IID categorical data, by PANG, Guansong; CAO, Longbing; CHEN, Ling. (2021). *Data Mining and Knowledge Discovery, 35* (4), (Published)

Heterogeneous Univariate Outlier Ensembles in Multidimensional Data, by PANG, Guansong; CAO, Longbing. (2020). *ACM Transactions on Knowledge Discovery from Data, 14* (6), 1-27. https://doi.org/10.1145/3403934 (Published)

Learning transferable deep convolutional neural networks for the classification of bacterial virulence factors, by ZHENG, Dandan; PANG, Guansong; LIU, Bo; CHEN, Lihong; YANG, Jian. (2020). *Bioinformatics, 36* (12), 3693-3702. (Published)

CURE: Flexible Categorical Data Representation by Hierarchical Coupling Learning, by JIAN, Songlei; PANG, Guansong; CAO, Longbing; LU, Kai; GAO, Hang. (2019). *IEEE Transactions on Knowledge and Data Engineering, 31* (5), 853-866. (Published)

ZERO plus plus : Harnessing the Power of Zero Appearances to Detect Anomalies in Large-Scale Data Sets, by PANG, Guansong; TING, Kai Ming; ALBRECHT, David; JIN, Huidong. (2016). *Journal of Artificial Intelligence Research, 57* 593-620. (Published)

CenKNN: a scalable and effective text classifier, by PANG, Guansong; JIN, Huidong; JIANG, Shengyi. (2015). *Data Mining and Knowledge Discovery, 29* (3), 593-265. https://www.researchgate.net/profile/Guansong-Pang/publication/263890481_CenKNN_a_scalable_and_effective_text_classifier/links/0deec53c481734b43a000000/CenKNN-a-scalable-and-effective-text-classifier.pdf (Published)

A generalized cluster centroid based classifier for text categorization, by PANG, Guansong; JIANG, Shengyi. (2013). *Information Processing and Management, 49* (2), 576-586. https://ir.nsfc.gov.cn/paperDownload/1000006552265.pdf (Published)

An improved *K*-nearest-neighbor algorithm for text categorization, by JIANG, Shengyi; PANG, Guansong; WU, Meiling; KUANG, Limin. (2012). *Expert Systems with Applications, 39* (1), 1503-1509. http://doi.org/10.1016/j.eswa.2011.08.040 (Published)

Editorials

Deep Learning for Anomaly Detection, by PANG, Guansong; AGGARWAL, Charu; SHEN, Chunhua; SEBE, Nicu. (2022). *IEEE Transactions on Neural Networks and Learning Systems, 33* (6), 2282-2286. https://doi.org/10.1109/TNNLS.2022.3162123 (Published)

The AI Chip Race, by PANG, Guansong. (2022). *IEEE Intelligent Systems, 37* (2), 111-112. https://doi.org/10.1109/MIS.2022.3165668 (Published)

AI in Beijing 2022 Olympic Winter Games, by PANG Guansong. (2022). *IEEE Intelligent Systems, 37* (1), 110-110. https://doi.org/10.1109/MIS.2022.3153210 (Published)

Guest Editorial: Non-IID Outlier Detection in Complex Contexts, by PANG, Guansong; ANGIULLI, Fabrizio; CUCURINGU, Mihai; LIU, Huan. (2021). *IEEE Intelligent Systems, 36* (3), 3-4. https://doi.org/10.1109/MIS.2021.3072704 (Published)

Conference Proceedings

Weakly supervised video anomaly detection and localization with spatio-temporal prompts, by WU, Peng; ZHOU, Xuerong; PANG, Guansong; YANG, Zhiwei; YAN, Qingsen; WANG, Peng; ZHANG, Yanning . (2024.0). *Proceedings of 32nd ACM International Conference on Multimedia (ACM MM 2024) : Melbourne, Australia, October 28 - November 1,* (pp. 9301-9310) Melbourne, Australia: Association for Computing Machinery. https://doi.org/10.1145/3664647.3681442 (Published)

SEMPO: Lightweight Foundation Models for Time Series Forecasting, by HE, Hui; YI, Kun; MA, Yuanchi; ZHANG, Qi; NIU, Zhengdong; PANG, Guansong. (2025.0). *Advances in Neural Information Processing Systems: Proceedings, December 2-7, San Diego,* San Diego: NIPS.

https://doi.org/10.48550/arXiv.2510.19710 (Forthcoming)

Robust hallucination detection in LLMs via adaptive token selection, by NIU, Mengjia; HADDADI, Hamed; PANG, Guansong. (2025.0). *Proceedings of the 39th Conference on Neural Information Processing Systems (NeurIPS 2025), San Diego, CA, December 2-7,* (pp. 1-23) San Diego, United States: https://doi.org/10.48550/arXiv.2504.07863 (Published)

Semisupervised graph anomaly detection via robust homophily learning, by AI, Guoguo; QIAO, Hezhe; YAN, Hui; PANG, Guansong. (2025.0). *Proceedings of the 39th Conference on Neural Information Processing Systems (NeurIPS 2025), San Diego, CA, December 2-7,* (pp. 1-26) San Diego, United States: https://doi.org/10.48550/arXiv.2506.15448 (Published)

MetaCAN: Improving generalizability of fewshot anomaly detection with metalearning, by LV, Zhisheng; ZHANG, Jianfeng; JIAN, Songlei; HUANG, Chenlin; ZHANG, Hongguang; PANG, Guansong; LIU, Zhong. (2025.0). *CIKM '25: Proceedings of the 34th ACM International Conference on Information and Knowledge Management, Seoul, Korea, November 10-14,* (pp. 2032-2041) New York : ACM. https://doi.org/10.1145/3746252.3761253 (Published)

Auxiliary prompt tuning of visionlanguage models for fewshot outofdistribution detection, by MIAO, Wenjun; PANG, Guansong; WANG, Zihan; ZHENG, Jin; BAI, Xiao. (2025.0). *Proceedings of the 2025 IEEE/CVF International Conference on Computer Vision (ICCV), Honolulu, Hawaii, October 19-23,* (pp. 4776-4785) Honolulu, Hawai'i: https://iccv.thecvf.com/virtual/2025/poster/2246 (Published)

Fine-grained abnormality prompt learning for zero-shot anomaly detection, by ZHU, Jiawen; ONG, YewSoon; SHEN, Chunhua; PANG, Guansong. (2025.0). *Proceedings of the 2025 IEEE/CVF International Conference on Computer Vision (ICCV), Honolulu, Hawaii, October 19-23,* (pp. 22241-22251) Honolulu, Hawai'i: https://openreview.net/forum?id=kS27PPs3yR (Published)

FreqLLM: Frequency-Aware Large Language Models for Time Series Forecasting, by WANG, Shunan; GAO, Min; WANG, Zongwei; BAI, Yibing; JIANG, Feng; PANG, Guansong. (2025.0). *Proceedings of the Thirty-Fourth International Joint Conference on Artificial Intelligence, IJCAI 2025, Montreal, August 16-22,* (pp. 3389-3397) Montreal, Canada: ijcai.org. https://doi.org/10.24963/ijcai.2025/377 (Published)

Zero-shot generalist graph anomaly detection with unified neighborhood prompts, by NIU, Chaoxi; QIAO, Hezhe; CHEN, Changlu; CHEN, Ling; PANG, Guansong. (2025.0). *IJCAI '25: Proceedings of the Thirty-Fourth International Joint Conference on Artificial Intelligence, Montreal, Canada, August 16-22,* (pp. 3226-3234) Canada: IJCAI. (Published)

AnomalyGFM: Graph foundation model for zero/few-shot anomaly detection, by QIAO, Hezhe; NIU, Chaoxi; CHEN, Ling; PANG, Guansong. (2025.0). *KDD '25: Proceedings of the 31st ACM SIGKDD Conference on Knowledge Discovery and Data Mining, August 3-7, Toronto,* (pp. 2326-2337) New York: ACM. https://doi.org/10.1145/3711896.373684 (Published)

AffinityTune: A Prompt-Tuning Framework for Few-Shot Anomaly Detection on Graphs, by CHEN, Jingyan; ZHU, Guanghui; PANG, Guansong; YUAN, Chunfeng; HUANG, Yihua. (2025.0). *KKD '25: Proceedings of the 31st ACM SIGKDD Conference on Knowledge Discovery and Data Mining, August 3-7, Toronto,* (pp. 179-190) New York: ACM. https://doi.org/10.1145/3711896.3736836 (Published)

Information bottleneckguided MLPs for robust spatialtemporal forecasting, by CHEN, Min; PANG, Guansong; WANG, Wenjun; YAN, Cheng. (2025.0). *Proceedings of the 42nd International Conference on Machine Learning (ICML 2025), Vancouver, Canada, July 13-19*
, (pp. 1-35) Vancouver, Canada: PMLR. (Published)

GrokFormer: Graph Fourier KolmogorovArnold transformers, by AI, Guoguo; PANG, Guansong; QIAO, Hezhe; GAO, Yuan; YAN, Hui. (2025.0). *Proceedings of the 42nd International Conference on Machine Learning (ICML 2025), Vancouver, Canada, July 13-19,* (pp. 1-20) Vancouver, Canada: PMLR. https://doi.org/10.48550/arXiv.2411.17296 (Published)

HVI: A new color space for low-light image enhancement, by YAN, Qingsen; FENG, Yixu; ZHANG, Cheng; PANG, Guansong; SHI, Kangbiao; WU, Peng; DONG, Wei; SUN, Jinqiu; ZHANG, Yanning. (2025.0). *2025 IEEE/CVF Conference on Computer Vision and Pattern Recognition, CVPR 2025: June 11-15, Nashville,* (pp. 5678-5687) Nashville: IEEE Computer Society. https://doi.org/10.1109/CVPR52734.2025.00533 (Published)

Adapting Large Language Models for parameter-efficient Log Anomaly Detection, by LIM, Ying Fu; ZHU, Jiawen; PANG, Guansong. (2025.0). *Data Science: Foundations and Applications: 29th Pacific-Asia Conference on Knowledge Discovery and Data Mining, PAKDD 2025, Sydney, NSW, Australia, June 10-13:*

Proceedings, (pp. 325-337) Cham: Springer. https://doi.org/10.1007/978-981-96-8298-0_26 (Published)

Open-set graph anomaly detection via normal structure regularisation, by WANG, Qizhou; PANG, Guansong; SALEHI, Mahsa; XIA, Xiaokun; LECKIE, Christopher. (2025.0). *International Conference on Learning Representations (ICLR 2025): Proceedings, April 24-28, Singapore,* (pp. 52628-52651) Singapore: ICLR. (Published)

Adaptive deviation learning for visual anomaly detection with data contamination, by DAS, Aanindya Sundar; PANG, Guansong; BHUYAN, Monowar. (2025.0). *2025 IEEE/CVF Winter Conference on Applications of Computer Vision (WACV): Tucson, AZ, February 26 - March 4: Proceedings,* (pp. 8863-8872) Pistacataway: IEEE. https://doi.org/10.1109/WACV61041.2025.00859 (Published)

LARA : A light and anti-overfitting retraining approach for unsupervised time series anomaly detection, by CHEN, Feiyi; QIN, Zhen; ZHOU, Mengchu; ZHANG, Yingying; DENG, Shuiguang; FAN, Lunting; PANG, Guansong; WEN, Qingsong . (2024.0). *Proceedings of the ACM Web Conference 2024 (WWW 2024) : Singapore, May 13-17,* (pp. 4138-4149) Singapore: ACM Digital Library. https://doi.org/10.1145/3589334.3645472 (Published)

Replay-and-forget-free graph class-incremental learning: A task profiling and prompting approach, by NIU, Chaoxi; PANG, Guansong; CHEN, Ling; LIU, Bing. (2024.0). *Proceedings of 38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024) : Vancouver, Canada, December 10-15,* (pp. 1-18) Vancouver: NeurIPS. https://doi.org/10.48550/arXiv.2410.10341 (Forthcoming)

Long-tailed out-of-distribution detection via normalized outlier distribution adaptation, by MIAO, Wenjun; PANG, Guansong; ZHENG, Jin; BAI, Xiao. (2024.0). *Proceedings of 38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024) : Vancouver, Canada, December 10-15,* (pp. 1-27) Vancouver: (Forthcoming)

Generative semi-supervised graph anomaly detection, by QIAO, Hezhe; WEN, Qingsong; LI, Xiaoli; LIM, Ee-Peng; PANG, Guansong. (2024.0). *Proceedings of 38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024) : Vancouver, Canada, December 10-15,* (pp. 1-29) Vancouver: NeurIPS. (Accepted)

Improving out-of-distribution detection with disentangled foreground and background features, by DING, Choubo; PANG, Guansong . (2024.0). *Proceedings of 32nd ACM International Conference on Multimedia (ACM MM 2024) : Melbourne, Australia, October 28 - November 1,* (pp. 8923-8931) Melbourne, Australia: ACM Digital Library. https://doi.org/10.1145/3664647.3681614 (Published)

Graph continual learning with debiased lossless memory replay, by NIU, Chaoxi; PANG, Guansong; CHEN, Ling. (2024.0). *Proceedings of the 27th European Conference on Artificial Intelligence (ECAI 2024) Including 13th Conference on Prestigious Applications of Intelligent Systems (PAIS 2024) : Santiago de Compostela, Spain, October 19-24,* (pp. 1808-1815) Santiago de Compostela: IOS Press. https://doi.org/10.3233/FAIA240692 (Published)

Imbalanced graph classification with multi-scale oversampling graph neural networks, by MA, Rongrong; PANG, Guansong; CHEN, Ling. (2024.0). *Proceedings of the International Joint Conference on Neural Networks (IJCNN 2024) : Yokohama, Japan, June 30 - July 5,* Yokohama, Japan: IEEE. https://doi.org/10.1109/IJCNN60899.2024.10651097 (Published)

Self-supervised spatial-temporal normality learning for time series anomaly detection, by CHEN, Yutong; XU, Hongzuo; PANG, Guansong; QIAO, Hezhe; ZHOU, Yuan; SHANG, Mingsheng. (2024.0). *Machine Learning and Knowledge Discovery in Databases. Research Track - European Conference, ECML PKDD 2024, Vilnius, Lithuania, September 9-13, 2024,* (pp. 145-162) Cham: Springer. https://doi.org/10.1007/978-3-031-70365-2_9 (Published)

Cluster-wide task slowdown detection in cloud system, by CHEN, Feiyi; ZHANG, Yingying; FAN, Lunting; LIANG, Yuxuan; PANG, Guansong; WEN, Qingsong; DENG, Shuiguang . (2024.0). *Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2024) : Barcelona, Spain, August 25-29,* (pp. 266-277) Barcelona, Spain: Association for Computing Machinery. https://doi.org/10.1145/3637528.3671936 (Published)

Zero-shot out-of-distribution detection with outlier label exposure, by DING, Choubo; PANG, Guansong. (2024.0). *International Joint Conference on Neural Networks (IJCNN 2024) : Yokohama, Japan, June 30 - July 5,* Yokohama. Japan: IEEE. https://doi.org/10.1109/IJCNN60899.2024.10650173 (Published)

Anomaly heterogeneity learning for open-set supervised anomaly detection, by ZHU, Jiawen; DING,

Choubo; TIAN, Yu; PANG, Guansong. (2024.0). *2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR): Seattle, June 16-22: Proceedings,* (pp. 17616-17626) Pistacataway: IEEE. https://doi.org/10.1109/CVPR52733.2024.01668 (Published)

Toward generalist anomaly detection via in-context residual learning with few-shot sample prompts, by ZHU, Jiawen; PANG, Guansong. (2024.0). *2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR): Seattle, June 16-22: Proceedings,* (pp. 1-17) Pistacataway: IEEE. https://doi.org/10.1109/CVPR52733.2024.01688 (Published)

Learning transferable negative prompts for out-of-distribution detection, by LI, Tianqi; PANG, Guansong; BAI, Xiao; MIAO, Wenjun; ZHENG, Jin. (2024.0). *Proceedings of IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2024): Seattle, WA, USA, June 16-22,* Seattle, USA: IEEE. https://doi.org/10.1109/CVPR52733.2024.01665 (Published)

Open-vocabulary video anomaly detection, by WU, Peng; ZHOU, Xuerong; PANG, Guansong; SUN, Yujia; LIU, Jing; WANG, Peng; ZHANG, Yanning. (2024.0). *Proceedings of IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2024): Seattle, WA, USA, June 16-22,* Seattle: IEEE. https://doi.org/10.1109/CVPR52733.2024.01732 (Published)

Unraveling the 'anomaly' in time series anomaly detection: A self-supervised tri-domain solution, by SUN, Yuting; PANG, Guansong; YE, Guanhua; CHEN, Tong; HU, Xia; YIN, Hongzhi. (2024.0). *Proceedings of the 2024 IEEE 40th International Conference on Data Engineering (ICDE), Utrecht, Netherlands, May 13-16* , (pp. 981-994) Los Alamitos, CA: IEEE. https://doi.org/10.1109/ICDE60146.2024.00080 (Published)

AnomalyCLIP: Object-agnostic prompt learning for zero-shot anomaly detection, by ZHOU, Qihang; PANG, Guansong; TIAN, Yu; HE, Shibo; CHEN, Jiming. (2024.0). *Proceedings of the Twelfth International Conference on Learning Representations, Vienna, Austria, ICLR 2024, May 7* , (pp. 1-33) Vienna, Austria: ICLR. https://openreview.net/forum?id=buC4E91xZE (Published)

Simple image-level classification improves open-vocabulary object detection, by FANG, Ruohuan; PANG, Guansong; BAI, Xiao. (2024.0). *Proceedings of the 38th AAAI Conference on Artificial Intelligence, AAAI 2024, Vancouver, Canada, February 20-27,* (pp. 1716-1725) Palo Alto, CA: AAAI. https://doi.org/10.1609/aaai.v38i2.27939 (Published)

VadCLIP: Adapting vision-language models for weakly supervised video anomaly detection, by WU, Peng; ZHOU, Xuerong; PANG, Guansong; ZHOU, Lingru; YAN, Qingsen; WANG, Peng; ZHANG, Yanning. (2024.0). *Proceedings of the 38th AAAI Conference on Artificial Intelligence, AAAI 2024, Vancouver, Canada, February 20-27,* (pp. 6074-6082) Vancouver: {AAAI} Press. https://doi.org/10.1609/aaai.v38i6.28423 (Published)

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Truncated Affinity Maximization: One-class homophily modeling for graph anomaly detection, by QIAO, Hezhe; PANG, Guansong. (2023.0). *Proceedings of Thirty-seventh Conference on Neural Information Processing Systems,* New Orleans, United States: https://doi.org/10.48550/arXiv.2306.00006 (Accepted)

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Unsupervised anomaly detection in medical images with a memory-augmented multi-level cross-attentional masked autoencoder, by TIAN, Yu; PANG, Guansong; LIU, Yuyuan; WANG, Chong; CHEN, Yuanhong; LIU, Fengbei; SINGH, Rajvinder; VERJANS, Johan W.; WANG, Mengyu; CARNEIRO, Gustavo. (2023.0). *Machine Learning in Medical Imaging: 14th International Workshop, MLMI 2023, Vancouver, October 8: Proceedings,* (pp. 11-21) Cham: Springer. (Published)

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Deep weakly-supervised anomaly detection, by PANG, Guansong; SHEN, Chunhua; JIN, Huidong; VAN DEN HENGEL, Anton. (2023.0). *Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Long Beach, United States, 2023 August 6-10* , (pp. 1795-1807) New York: Association for Computing Machinery. https://doi.org/10.1145/3580305.3599302 (Published)

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International workshop on learning with knowledge graphs: Construction, embedding, and reasoning, by LI, Qing; HUANG, Xiao; LIU, Ninghao; DONG, Yuxiao; PANG, Guangsong. (2023.0). *Proceedings of the Sixteenth ACM International Conference on Web Search and Data Mining,* (pp. 1273-1274) New York, NY, United States: Association for Computing Machinery. https://doi.org/10.1145/3539597.3572705 (Published)

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Pixel-wise energy-biased abstention learning for anomaly segmentation on complex urban driving scenes, by TIAN, Yu; LIU, Yuyuan; PANG, Guansong; LIU, Fengbei; CHEN, Yuanhong; CARNEIRO, Gustavo. (2022.0). *Computer Vision ECCV 2022: 17th European Conference, Tel Aviv, Israel, October 23-27: Proceedings,* (pp. 246-263) Cham: Springer. https://doi.org/10.1007/978-3-031-19842-7_15 (Published)

Contrastive transformer-based multiple instance learning for weakly supervised polyp frame detection, by YU, Tian; PANG, Guansong; LIU, Fengbei; LIU, Yuyuan; WANG, Chong; CHEN, Yuanhong; VERJANS, Johan; CARNEIRO, Gustavo. (2022.0). *Proceedings of the 25th International Conference on Medical Image Computing and Computer Assisted Intervention, Singapore, 2022 September 18 - 22,* Switzerland: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-16437-8_9 (Published)

ANDEA: anomaly and novelty detection, explanation, and accommodation, by PANG, Guansong; LI, Jundong; VAN DEN HENGEL, Anton; CAO, Longbin; DIETTERICH, Thomas G.. (2022.0). *Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Washington DC, USA, 2022 August 14 -18,* (pp. 4892-4893) Washington: Association for Computing Machinery. https://doi.org/10.1145/3534678.3542910 (Published)

Catching both gray and black swans: Open-set supervised anomaly detection, by DING, Choubo; PANG, Guansong; SHEN, Chunhua. (2022.0). *2022 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), New Orleans, June 18-24: Proceedings,* (pp. 7378-7388) Piscataway, NJ: IEEE. https://doi.org/10.1109/CVPR52688.2022.00724 (Published)

Deep depression prediction on longitudinal data via joint anomaly ranking and classification, by PANG, Guosong; PHAM, Ngoc Thien Anh; BAKER, Emma; BENTLEY, Rebecca; VAN DEN HENGEL, Anton. (2022.0). *Advances in Knowledge Discovery and Data Mining: 26th Pacific-Asia Conference PAKDD 2022, Chengdu,*

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Deep graph-level anomaly detection by glocal knowledge distillation, by MA, Rongrong; PANG, Guansong; CHEN, Ling; HENGEL, Anton Van Den. (2022.0). *WSDM '22: Proceedings of the 15th ACM International Conference on Web Search and Data Mining, Virtual Conference, February 21-25,* (pp. 704-714) New York: ACM. https://doi.org/10.1145/3488560.3498473 (Published)

BV-Person: A Large-scale dataset for bird-view person re-identification, by YAN, Cheng; PANG, Guansong; WANG, Lei; JIAO, Jile; FENG, Xuetao; SHEN, Chunhua; LI, Jingjing. (2021.0). *2021 18th IEEE/CVF International Conference on Computer Vision: Proceedings, Virtual, October 11-17,* (pp. 10923-10932) Los Alamitos, CA: IEEE Computer Society. https://doi.org/10.1109/ICCV48922.2021.01076 (Published)

Occluded person re-identification with single-scale global representations, by YAN, Cheng; PANG, Guansong; JIAO, Jile; BAI, Xiao; FENG, Xuetao; SHEN, Chunhua. (2021.0). *2021 IEEE/CVF International Conference on Computer Vision (ICCV): Proceedings, Virtual, 10-17 October,* (pp. 11855-11864) Los Alamitos, CA: IEEE Computer Society. https://doi.org/10.1109/ICCV48922.2021.01166 (Published)

Weakly-supervised video anomaly detection with contrastive learning of long and short-range temporal features, by TIAN, Yu; PANG, Guansong; CHEN, Yuanhong; SINGH, Rajvinder; VERJANS, Johan W.; CARNEIRO, Gustavo. (2021.0). *2021 18th IEEE/CVF International Conference on Computer Vision: Proceedings, Virtual, October 11-17,* (pp. 1-13) Los Alamitos, CA: IEEE Computer Society. https://doi.org/10.1109/ICCV48922.2021.00493 (Published)

Constrained contrastive distribution learning for unsupervised anomaly detection and localisation in medical images, by TIAN, Yu; PANG, Guansong; LIU, Fengbei; CHEN, Yuanhong; SHIN, Seon Ho; VERJANS, Johan W.; SINGH, Rajvinder. (2021.0). *Medical Image Computing and Computer-Assisted Intervention: MICCAI 2021: 24th International Conference, Strasbourg, France, September 27 - October 1: Proceedings,* (pp. 128-140) Cham: Springer. https://doi.org/10.1007/978-3-030-87240-3_13 (Published)

Toward deep supervised anomaly detection: Reinforcement learning from partially labeled anomaly data, by PANG, Guansong; HENGEL, Anton Van Den; SHEN, Chunhua; CAO, Longbing. (2021.0). *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Virtual Conference, 2021 August 14-18,* (pp. 1298-1308) Virtual Conference: ACM. (Published)

Anomaly and Novelty Detection, Explanation, and Accommodation (ANDEA), by PANG, Guansong; LI, Jundong; HENGEL, Anton Van Den; CAO, Longbing; DIETTERICH, Thomas G.. (2021.0). *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discover & Data Mining, Virtual Conference, 2021 August 14-18,* (pp. 4145-4146) Virtual Conference: ACM. (Published)

Toward explainable deep anomaly detection, by PANG, Guansong; AGGARWAL, Charu. (2021.0). *Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, Virtual Conference, August 14-18,* (pp. 4056-4057) Virtual Conference: ACM. (Published)

Deep learning for anomaly detection: Challenges, methods, and opportunities, by PANG, Guansong; CAO, Longbing; AGGARWAL, Charu. (2021.0). *Proceedings of the 14th ACM International Conference on Web Search Data Mining, Virtual Conference, 2021 March 8-12,* (pp. 1127-1130) Virtual Conference: ACM. (Published)

Unsupervised representation learning by predicting random distances, by WANG, Hu; PANG, Guansong; SHEN, Chunhua; MA, Congbo. (2020.0). *Proceedings of the 29th International Joint Conference on Artificial Intelligence IJCAI 2020, Virtual Conference, January 7-15,* (pp. 2950-2956) Virtual Conference: IJCAI. (Published)

Self-trained deep ordinal regression for end-to-end video anomaly detection, by PANG, Guansong; YAN, Cheng; SHEN, Chunhua; HENGEL, Anton Van Den; BAI, Xiao. (2020.0). *Proceedings of 2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition, Virtual Conference, June 13-19,* (pp. 12173-12182) Virtual Conference: Computer Vision Foundation / {IEEE}. (Published)

Learning discriminative neural sentiment units for semi-supervised target-level sentiment classification, by ZHAO, Jingjing; YANG, Yao; PANG, Guansong; LV, Lei; SHANG, Hong; SUN, Zhongqian; YANG, Wei.

(2020.0). *Proceedings of the 24th Pacific-Asia Conference, PAKDD 2020, Singapore, May 11-14,* (pp. 798-810) Singapore: Springer. (Published)

Deep hashing by discriminating hard examples, by YAN, Cheng; PANG, Guansong; BAI, Xiao; SHEN, Chunhua; ZHOU, Jun; HANCOCK, Edwin. (2019.0). *Proceedings of the 27th ACM International Conference on Multimedia, Nice, France, 2019 October 21-25,* (pp. 1535-1542) Nice, France: ACM. (Published)

Deep anomaly detection with deviation networks, by PANG, Guansong; SHEN, Chunhua; HENGEL, Anton van den. (2019.0). *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, Anchorage, USA, 2019 August 4-8,* (pp. 353-362) Anchorage, USA: ACM. (Published)

Self-supervised feature learning for semantic segmentation of overhead imagery, by SINGH, Suriya; BATRA, Anil; PANG, Guansong; TORRESANI, Lorenzo; BASU, Saikat; PALURI, Manohar; JAWAHAR, C. V.. (2018.0). *Proceedings of the 29th British Machine Vision Conference 2018: Norththumbria, September 3-6,* (pp. 1-13) Newcastle: BMVA Press. (Published)

Learning representations of ultrahigh-dimensional data for random distance-based outlier detection, by PANG, Guansong; CAO, Longbing; CHEN, Ling; LIAN, Defu; LIU, Huan. (2018.0). *Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, London, 2018 August 19-23,* (pp. 3892-3899) London: ACM. (Published)

Sparse modeling-based sequential ensemble learning for effective outlier detection in high-dimensional numeric data, by PANG, Guansong; CAO, Longbing; CHEN, Ling; LIAN, Defu; LIU, Huan. (2018.0). *Proceedings of 32nd AAAI Conference on Artificial Intelligence 2018, New Orleans, February 2-7,* (pp. 3892-3899) Palo Alto, CA: AAAI Press. (Published)

Selective value coupling learning for detecting outliers in high-dimensional categorical data, by PANG, Guansong; XU, Hongzuo; CAO Longbing; ZHAO, Wentao. (2017.0). *Proceedings of the 26th ACM Conference on Information and Knowledge Management, Singapore, November 6-10,* (pp. 807-816) Singapore: ACM. (Published)

Embedding-based representation of categorical data by hierarchical value coupling learning, by JIAN, Songlei; CAO, Longbing; PANG, Guansong; LU, Kai; GAO, Hang. (2017.0). *Proceedings of the 26th International Joint Conference on Artificial Intelligence, Melbourne, Australia, August 19-25,* (pp. 1937-1943) Melbourne, Australia: IJCAI. (Published)

Learning homophily couplings from non-iid data for joint feature selection and noise-resilient outlier detection, by PANG, Guansong; CAO, Longbing; CHEN, Ling; LIU, Huan . (2017.0). *Proceedings of the 26th International Joint Conference on Artificial Intelligence, Melbourne, Australia, August 19-25,* (pp. 2585-2591) Melbourne, Australia: IJCAI. (Published)

Unsupervised feature selection for outlier detection by modelling hierarchical value-feature couplings, by PANG, Guansong; CAO, Longbing; CHEN, Ling; LIU, Huan. (2016.0). *Proceedings of the 16th International Conference on Data Mining (ICDM), Barcelona, Spain, 2016 December 12-15,* (pp. 410-419) Barcelona, Spain: IEEE. (Published)

Outlier detection in complex categorical data by modeling the feature value couplings, by PANG, Guansong; CAO, Longbing; CHEN, Ling. (2016.0). *Proceedings of the Twenty-Fifth International Joint Conference on Artificial Intelligence, New York, 2016 July 9-15,* (pp. 1902-1908) New York: ACM. (Published)

LeSiNN: Detecting anomalies by Identifying least similar nearest neighbours, by PANG, Guansong; TING, Kai Ming; ALBRECHT, David. (2015.0). *Proceedings of the 2015 IEEE International Conference on Data Mining Workshop (ICDMW), Atlantic City, New Jersey, November 14-17,* (pp. 1-8) Atlantic City: {IEEE} Computer Society. (Published)

A simple integration of social relationship and text data for identifying potential customers in microblogging, by PANG, Guansong; JIANG, Shengyi; CHEN, Dongyi. (2013.0). *Proceedings of the 9th International Conference, ADMA 2013, Hangzhou, China, December 14-16,* (pp. 397-409) Hangzhou, China: Springer. (Published)

Edited Conference Proceedings

Data Science: Foundations and applications: 29th Pacific-Asia Conference on Knowledge Discovery and

Data Mining, PAKDD 2025, Sydney, June 10-13, Proceedings, Part VI, edited by WU, Xintao; Spiliopoulou, Myra; WANG, Can; KUMAR, Vipin; CAO, Longbing; ZHOU, Xiangmin; PANG, Guansong; GAMA, Joao. (13/06/2025). Lecture Notes in Computer Science, 15875. Cham: Springer. https://doi.org/10.1007/978-981-96-8295-9 (Published)

Data Science: Foundations and applications: 29th Pacific-Asia Conference on Knowledge Discovery and Data Mining, PAKDD 2025, Sydney, June 10-13, Proceedings, edited by WU, Xintao; Spiliopoulou, Myra; WANG, Can; KUMAR, Vipin; CAO, Longbing; ZHOU, Xiangmin; PANG, Guansong; GAMA, Joao. (13/06/2025). Lecture Notes in Computer Science, Cham: Springer. https://doi.org/10.1007/978-981-96-8298-0 (Published)

Working Papers

Self-supervised multi-class pre-training for unsupervised anomaly detection and segmentation in medical images, by TIAN, Yu; LIU, Fengbei; PANG, Guansong; CHEN, Yuanhong; LIU, Yuyuan; VERJANS, Johan W.; SINGH, Rajvinder, CARNEIRO, Gustavo. (2021). EuropePMC. (Published)

Explainable deep few-shot anomaly detection with deviation networks, by PANG, Guansong; DING, Choubo; SHEN, Chunhua; HENGEL, Anton Van Den. (2021). (Published)

DRAM failure prediction in AIOps: Empirical evaluation, challenges and opportunities, by WU, Zhiyue; XU, Hongzuo; PANG, Guansong; YU, Fengyuan; WANG, Yijie; JIAN, Songlei; WANG, Yongjun. (2021). (Published)

Deep multi-task learning for depression detection and prediction in longitudinal data, by PANG, Guansong; PHAM, Ngoc Thien Anh; BAKER, Emma; BENTLEY, Rebecca; HENGEL, Anton Van Den. (2020). (Published)

Weakly-supervised deep anomaly detection with pairwise relation learning, by PANG, Guansong; HENGEL, Anton Van Den; SHEN, Chuanhua. (2019). (Published)

Research Grants

Singapore Management University

Development of Secured Components & Systems in Emerging Technologies through Hardware & Software Evaluation, National Cybersecurity R&D (NCR) Programme, Cyber Security Agency of Singapore (CSA) , PI (Project Level): DING Xuhua, Debin GAO, Robert H DENG, David LO , Co-PI (Project Level): Guansong PANG, JIANG Lingxiao, DUAN Yue, YANG Guomin, PANG Hwee Hwa, 2023, S$11,365,070

Trustworthy Foundation Models for Log Anomaly Detection, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): Guansong PANG, 2024, S$295,120

Deep few-shot anomaly detection, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): Guansong PANG, 2021, S$99,984.87

Other Institutions

Android App Analysis with AI-Enabled Usability, Translation and Innovation Grants, CyberSG R&D Programme Office PI (Project Level): Debin GAO, Co-PI (Project Level): David LO, Guansong PANG, 2025, SGD1,792,700

TEACHING

Teaching Areas

Principles of Machine Learning, 2022 -
Foundations of Cybersecurity, 2022 -

Courses Taught

<u>Singapore Management University</u>

Undergraduate Programmes :

Foundations of Cybersecurity

Principles of Machine Learning

Postgraduate Professional Programmes :

Capstone Project - Data Science and Engineering

Capstone Project - Software and Cyber-Physical Systems

Postgraduate Research Programmes :

Empirical Research Project 1

Empirical Research Project 2

Empirical Research Project 4

THESES AND DISSERTATIONS

Theses and Dissertations Assessed

<u>Other Institutions</u>

Examiner, "Few-shot 3D Novel View Synthesis with Depth Guidance", Thesis by Qianying Dong, Master of Philosophy, The University of New South Wales, 2025

Co Supervisor, "Deep Learning on Abnormal and Evolving Graphs", Thesis by Chaoxi Niu, Doctor of Philosophy, University of Technology Sydney, 2025

Co Supervisor, "Deep Anomaly Detection in Open Worlds", Thesis by Choubo Ding, Doctor of Philosophy, The University of Adelaide, 2025

Co Supervisor, "Graph Representation Learning for Graph-level Classification and Anomaly Detection", Thesis by Rongrong Ma, Doctor of Philosophy, University of Technology Sydney, 2025

Examiner, "Unlocking the Power of Contrastive Learning: From Unsupervised to Supervised Paradigms", Thesis by Mingkai Zheng, Doctor of Philosophy, The University of Sydney, 2025

Examiner, "Improving adversarial robustness of machine learning models", Thesis by PARK, Ji-Young, Doctor of Philosophy, University of South Australia, 2024

Co Supervisor, "Connecting Machine Learning to Causal Structure Learning with Jacobian Matrix", Thesis by Xiongren Chen, Master of Philosophy, The University of Adelaide, 2021

Co Supervisor, "Efficient Fully-Convolutional Networks for Image Perception", Thesis by Hao Chen, Doctor of Philosophy, The University of Adelaide, 2021

OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES

Invited Seminars, Talks and Lectures

Graph Foundation Models for Anomaly Detection in Financial Networks, 16 Nov 2025. Workshop on AI for Financial Fraud Detection & Prevention @ ACM Int. Conf. on AI in Finance 2025, Singapore

Learning Generalist Anomaly Detectors, 04 Mar 2025. WACV 2025 Workshop on Automated Spatial and Temporal Anomaly Detection

Generalist Anomaly Detection, 04 Aug 2024. IJCAI Workshop on Anomaly Detection with Foundation Models (ADFM 2024)

Supervised Anomaly Detection in Open Worlds, 01 Nov 2023. A*Star Institute for Infocomm Research Seminar

Deep Learning of the Unknowns: Anomaly and Out-of-distribution Detection Perspectives, 30 Oct 2023. Guangdong Artificial Intelligence and Digital Economy Laboratory Research Seminar

Deep Learning of the Unknowns: Anomaly and Out-of-distribution Detection Perspectives, 30 Nov 2022. A*STAR Centre for Frontier AI Research (CFAR) Rising Star Lecture Series

UNIVERSITY SERVICE

Singapore Management University

Organizer, SMU 2025 Workshop on Advances of Generative AI (GenAI), Apr 2025

Course Coordinator, CS440 Foundations of Cybersecurity, Jan 2025 - Present

Course Coordinator, CS421 Principles of Machine Learning, Jun 2022 - Present

EXTERNAL SERVICE – PROFESSIONAL

Committee Member, ICCV 2025 and ACM Multimedia 2025, 2025 - Present

Workshop Organizer, CVPR 2025 Workshop on Visual Anomaly and Novelty Detection (VAND 2025), 2025 - Present

Senior Program Committee Member, PAKDD 2025, CIKM 2025, 2025 - Present

Track Organizer, PAKDD 2025 , 2025 - Present

Publicity Chair, CoLLAs 2025, 2025 - Present

Area Chair, CVPR 2025, NeurIPS 2025, ICLR 2026, ICML 2025, 2025 - Present

Area Chair, IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR 2025), 2024 - Present

Senior Program Committee Member, The Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2025), 2024 - Present

Tutorial Co-chair, Conference Organizers, The 20th International Conference Advanced Data Mining and Applications 2024 (ADMA 2024), 2024

Area Chair, The 31st ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2025), 2024 - Present

Area Chair, The Thirteenth International Conference on Learning Representations (ICLR 2025), 2024 - Present

Area Chair, The Thirty-eighth Annual Conference on Neural Information Processing Systems (NeurIPS 2024), 2024 - Present

Workshop Organizer, CVPR Workshop on Visual Anomaly and Novelty Detection (VAND 2024), 2024

Reviewer Journal Article, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Image Processing, IEEE Transactions on Software Engineering, IEEE Computational Intelligence Magazine, Proceedings of the IEEE, ACM Computing Surveys, ACM Transactions on Intelligent Systems and Technology, International Journal of Computer Vision, NAR Genomics and Bioinformatics, 2024

Editor Associate Editor, Editorial Board, IEEE Transactions on Neural Networks and Learning Systems, 2023 - Present

Area Chair, Program Committee, IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR), 2023 - 2024

Publication Co-chair, Conference Organizers, IEEE Conference on Artificial Intelligence, 2023 - 2024

Reviewer Journal Article, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Image Processing, International Journal of Computer Vision, IEEE Transactions on Neural Networks and Learning Systems, Neural Networks, Pattern Recognition, Data Mining and Knowledge Discovery, 2023

Member, Program Committee, IJCAI, AAAI, KDD, NeurIPS, ICML, ICLR, CVPR, ICCV, ECCV, ICDM, 2023

Senior Program Member, Program Committee, 27th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2023), 2023

Workshop Organizer, Organization Committee, International Workshop on Learning with Knowledge Graphs, 2022 - 2023

Student Volunteers Co-chairs, Conference Organization, 16th ACM International Conference on Web Search and Data Mining (WSDM 2023), 2022 - 2023

Member, Editorial Board, International Journal of Data Science and Analytics, 2022 - Present

Editorial Review Board Member, Frontiers in Computer Science , 2022 - Present

Department Editor, Editorial Board, IEEE Intelligent Systems, 2022 - Present

Member, Program Committee, IJCAI, AAAI, KDD, NeurIPS, ICML, ICLR, CVPR, ICCV, ECCV, PAKDD, ECML-PKDD, WSDM, ICDM, SDM, 2022

Workshop Organizer, SIGKDD Workshop on Anomaly and Novelty Detection, Explanation and Accommodation, 2021 - Present

Guest Editor, Special Issue on "Deep Learning for Anomaly Detection", IEEE Transactions on Neural Networks and Learning Systems, 2020 - 2022

Workshop Organizer, IJCAI Workshop on Artificial Intelligence for Anomalies and Novelties (AI4AN) , 2020 - Present

Guest Editor, Special Issue on "Non-IID outlier detection in complex contexts", IEEE Intelligent Systems, 2019 - 2021

Publicity Co-chair, 2019 IEEE International Conference on Data Science and Advanced Analytics (DSAA), 2019

EXTERNAL SERVICE – PUBLIC SECTOR AND COMMUNITY SERVICE

Executive Committee Member, ACM SIGKDD Singapore Chapter, 2025 - Present

Committee Member, IEEE Task Force on AI for Time Series and Spatio-Temporal Data, 2025 - Present

Grant Proposal Reviewer External, Infocomm Media Development Authority (IMDA) and National Research Foundation (NRF), 2023

Grant Proposal Reviewer External, Horizon Europe, European Research Council (ERC), 2022