Xuan Kan

+1 404-725-8206 • xuan.kan@emory.edu • kanxuan.live

Education

- **Emory University** — **Altanta, US**
  PhD of Computer Science and Informatics at CS Department — *Sept.2019–Now*
  Advisor: Prof. Carl Yang and Prof. Ying Guo
- **Tongji University** — **Shanghai, China**
  Bachelor of Software Engineering in School of Software Engineering — *Sept.2014–Jul.2018*
- **GPA:** 4.55/5.0 (Tongji), 3.97/4.0 (Emory)
- **Research Interest:** Machine Learning, Graph Data Mining, Medical Imaging

Experience

Student Researcher — **Atlanta, US**
Google — *Oct.2022-June,2023*
Interned as a part-time researcher on Google Federated Assistant Team. Employed federated learning and parameter-efficient transfer learning to solve the massive data requirement of ASR models and the substantial communication cost between servers and clients.

PhD Software Engineer Intern — **Seattle, US**
Meta — *May.2022-August.2022*
Interned in Ads Core ML Team for Signal Loss problem. My project aims to build Multi-Task Multi-Label (MTML) Hypergraph Neural Network (HGNN).

- Hive table generation from Ads data. Since the used data source will generate 3 billion records daily, optimized the query process for the hive table generation with downsampling and parallelization.
- TorchTec model implementation. Mimicked the previous MTML model implemented by caffe2, implemented our HGNN version on TorchRec, and continued optimizing my TorchRec model until a competitive performance was obtained.
- New task design. With the new data and model, defined 9 tasks for the HGNN model and designed experiments to find the best task combo.
- Performance evaluation. Compared with the single task HGNN, the MTML HGNN's training NE with the best task combo decreases from 0.5549 to 0.554 significantly, approximately 0.16% improvement, which unleashes the power of MTML.
- Enlarge the HGNN model. Added 20 kinds of edges and 10 kinds of nodes to the hypergraph.

Research Intern — **Beijing, China**
SenseTime — *Feb.2019-July.2019*
Interned in SenseTime Smart City Group. My project aims to accelerate the neural network inference time in mobile devices with Neural Architecture Search (NAS) for stereo matching.

- Implemented a NAS framework based on the paper *FBNet: Hardware-Aware Efficient ConvNet Design via Differentiable Neural Architecture Search*.
- Designed the search space for MobileNetV2.
- Measured the running time of different modules in mobile devices.
- Leveraged Neural Architecture Search to improve efficiency and accelerate the inference of neural networks on face anti-spoofing and stereo matching.

Research Intern **Oxford, UK**
University of Oxford *April 2017-May.2018*
Interned in Cyber Physical Systems Group. Assisted and finished 3 projects, each publishing a related paper.

- Autonomous Learning for Face Recognition in the Wild: proposed a method using Wi-Fi appearance information to label images automatically in wild and implemented a pipeline framework to label capturing images and fine-tune models.
- Real-time Liquids Intake Monitoring: utilized a SVM model to detect actions for drinking water in Android Wear OS.
- Biometric Verification without Leak: developed an app in Android Wear OS for collecting user motion data and implemented a method like counting CPU time slices to calculate the energy and CPU consumption of watch apps.

Publication

- **Xuan Kan***, Zimu Li*, Hejie Cui, Yue Yu, Ran Xu, Shaojun Yu, Zilong Zhang, Ying Guo, Carl Yang. "R-Mixup: Riemannian Mixup for Biological Networks", Proceedings of the ACM International Conference on Knowledge Discovery and Data Mining 2023, **KDD 2023 (Co-first author)**
- Yue Yu, **Xuan Kan**, Hejie Cui, Ran Xu, Yujia Zheng, Xiangchen Song, Yanqiao Zhu, Kun Zhang, Razieh Nabi, Ying Guo, Chao Zhang, Carl Yang. "Learning Task-Aware Effective Brain Connectivity for fMRI Analysis with Graph Neural Networks", Proceedings of the IEEE International Symposium on Biomedical Imaging, **ISBI 2023**.
- Wei Dai, Hejie Cui, **Xuan Kan**, Ying Guo, Carl Yang. "Transformer Based Hierarchical Clus- tering On Brain Networks", Proceedings of the IEEE International Symposium on Biomedical Imaging, **ISBI 2023**.
- Ran Xu, Yue Yu, Hejie Cui, **Xuan Kan**, Yanqiao Zhu, Joyce Ho, Chao Zhang, Carl Yang. "Neighborhood-regularized Self-Training for Learning with Few Labels", Proceedings of the AAAI International Conference on Artificial Intelligence, **AAAI 2023 (Oral)**.
- **Xuan Kan**, Wei Dai, Hejie Cui, Zilong Zhang, Ying Guo, Carl Yang. "Brain Network Transformer", Proceedings of the Conference on Neural Information Processing Systems, **NeurIPS 2022**
- Yi Yang, Yanqiao Zhu, Hejie Cui, **Xuan Kan**, Lifang He, Ying Guo, Carl Yang. "Data-Efficient Brain Connectome Analysis via Multi-Task Meta-Learning", Proceedings of the ACM International Conference on Knowledge Discovery and Data Mining 2022, **KDD 2022**
- Hejie Cui, Wei Dai, Yanqiao Zhu, **Xuan Kan**, Antonio Aodong Chen Gu, Joshua Lukemire, Liang Zhan, Lifang He, Ying Guo, Carl Yang. BrainGB: A Benchmark for Brain Network Analysis with Graph Neural Networks. IEEE Transactions on Medical Imaging, **TMI 2022**
- **Xuan Kan**, Hejie Cui, Joshua Lukemire, Ying Guo, Carl Yang. "FBNetGen: Task-aware GNN-based fMRI Analysis via Functional Brain Network Generation", Proceedings of the Medical Imaging with Deep Learning 2022, **MIDL 2022 (Oral)**
- **Xuan Kan**, Hejie Cui, Carl Yang. "Zero-Shot Scene Graph Relation Prediction through Commonsense Knowledge Integration", Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases 2021, **ECML-PKDD 2021**
- Xiaoxuan Lu*, **Xuan Kan***, Stefano Rosa, Bowen Du, Hongkai Wen, Andrew Markham, Niki Trigoni. "AutoTune: Autonomous Learning for Face Recognition in the Wild via Ambient Wireless Cues", The Web Conference 2019, **WWW 2019 (Co-first author)**
- Bowen Du, Chris Xiaoxuan Lu, **Xuan Kan**, Kai Wu, Man Luo, Jianfeng Hou, Kai Li, Salil Kanhere, Yiran Shen, Hongkai Wen. "HydraDoctor: real-time liquids intake monitoring by collaborative sensing", Proceedings of the 20th International Conference on Distributed Computing and Networking, **ICDCN 2019**
- Xiaoxuan Lu, **Xuan Kan**, Bowen Du, Changhao Chen, Hongkai Wen, Andrew Markham, Niki Trigoni, Jack Stankovic. "Poster Abstract: Towards Self-supervised Face Labeling via Cross-modality Association",

Proceedings of the 15th ACM Conference on Embedded Networked Sensor Systems, **SenSys 2017**

Honor and Awards

- 2018 Outstanding Graduates for Tongji University (Top 5%)
- 2017 National Scholarship (Top 1.6%)
- 2017 American Mathematical Contest in Modeling (S prize)
- 2017 Tongji University Programming Competition (Second Prize)
- 2017 National Undergraduate Innovation Programs
- 2016 China Undergraduate Mathematical Contest in Modeling (First Prize in Shanghai & Second Prize in National Level)
- 2016 Android Entrepreneurship Student Challenge by Google Inc.(Sliver Prize)
- 2015 & 2016 Tongji University Scholarship for Outstanding Students (Twice)

Skills

- **Programming:** Adept in Python, PyTorch, C++, Java, C, familiar with Tensorflow, JavaScript
- **Platforms:** Linux, MacOS, Anaconda