

Xuan Kan

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Education

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

Experience

Student Researcher

Google

Remote

Oct.2022–Now

Interned as a part-time researcher on Google Federated Assistant Team.

PhD Software Engineer Intern

Meta

Seattle, US

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

SenseTime

Beijing, China

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

University of Oxford

Oxford, UK

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**, 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", 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", 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", 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", The 15th ACM Conference on Embedded Networked Sensor Systems, **SenSys 2017**

Workshop

- **Xuan Kan**, Wei Dai, Hejie Cui, Zilong Zhang, Ying Guo, Carl Yang. "Brain Network Transformer", ICML 2022 Workshop for Interpretable Machine Learning in Healthcare, **IMLH@ICML 2022 (Oral)**
- **Xuan Kan**, Hejie Cui, Ying Guo, Carl Yang. "Effective and Interpretable fMRI Analysis via Functional Brain Network Generation", ICML 2021 Workshop for Interpretable Machine Learning in Healthcare, **IMLH@ICML 2021**
- Xiaoxuan Lu, Bowen Du, **Xuan Kan**, Hongkai Wen, Andrew Markham and Niki Trigoni. "VeriNet: Passcode-Preserving User Verification on Smartwatches via Behavior Biometrics", The 1st ACM Workshop

on Mobile Crowdsensing Systems and Applications, **CrowdSys 2017** (Colocated with MobiSys)

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