Ziyi Kou

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EDUCATION

[*Transfer*] **University of Illinois Urbana-Champaign**	**Champaign, IL**	**2021.6 - Present**
Ph.D Student in Information Sciences, *Advisor: Dong Wang*		
University of Notre Dame	**Notre Dame, IN**	**2020.9 – 2021.6**
Ph.D Student in Computer Science and Engineering, *Advisor: Dong Wang*		
University of Rochester	**Rochester, NY**	**2018.9 – 2020.6**
M.S. in Computer Science, *Advisor: Chenliang Xu*		
Chongqing University	**Chongqing, China**	**2014.9 – 2018.6**
B.Eng. in Software Engineering		

EXPERIENCE

Research Assistant   **University of Notre Dame & UIUC**   **Jul. 2020 – Present**

- [GROUP'22] *A Hierarchical Multi-Relation Graph Neural Network towards Explainable Unseen COVID-19 Fake News Detection*
  - Built a knowledge graph based relation graph neural network (RGCN) to detect and explain COVID-19 fake news
  - The algorithm can accurately detect the newly emerged COVID-19 fake news (87.6%) in social media
- [IWQoS'21] *Data Augmentation on Fairness: A Data Sampling Algorithm to Improve Fairness of Face Recognition Algorithms*
  - Built an entropy-based data sampling framework to improve fairness of current human face datasets
  - The augmented datasets significantly improve fairness (0.107 eq. odds) of different face recognition algorithms
- [INFOCOM'21] *Distributed Abnormal Health Prediction: Federated Learning based Human Abnormal Health Detection*
  - Built a federated reinforcement learning (FL) framework to detect abnormal health condition using human edge devices
  - The designed framework can effectively detect human abnormal health condition in a real distributed scenario
- [BigData'20] *Explainable Misinformation Detection: Multi-Modal Graph based Explainable Fauxtography Detection*
  - Built a multi-modal graph neural network (GCN) to detect and explain online fauxtography social media posts
  - The algorithm effectively identifies and explains recent multi-modal fauxtography posts (98.1% acc.) in social media

Research Assistant   **University of Rochester**   **Sep. 2019 – Apr. 2020**

- [WACV'21] *Image Object Localization for Free: An adversarial deep learning model for Weakly Supervised Object Localization*
  - Built an adversarial object localization algorithm to estimate object locations in given images without position annotations
  - The proposed algorithm achieved state-of-the-art performance (71.2% IoU) on the object localization task
- [ECCV'20] *Talking Head Generation: A 3D-aware deep Generative Network for Talking Head Generation*
  - Built a meta learning temporal based algorithm to predict human facial expression and natural human head movement
  - The proposed algorithm generates high-quality (0.79 SSIM) talking heads with rhythmic motion and customized speech

Machine Learning Engineer Intern   **AI Laboratory of Shanghai Jiaotong University**   **Jun. 2019 – Sep. 2019**

- *Celebrity Face Recognition: A TV embedded Light-Weight Deep Face Recognition Model for Asian Celebrity*
  - Processed human face data with Spark and developed an angular based face recognition algorithm based on LightCNN
  - The algorithm can accurately detect Asian celebrity faces (97.5% accuracy) in real time for celebrities in TV shows

SKILLS

Programming: PyTorch, Keras, Sklearn; Python, R, Numpy/Pandas, SQL, Javascript; Hadoop, Spark; Tableau, d3.js; Web Development

Machine Learning: Classification/Regression, Object Detection, Image Generation, Graph Theory, Clustering, Video Classification

Mathematics & Statistics: Linear Algebra, Computer Algorithm, A/B testing, Probabilistic Modeling, Time-Series Modeling

Technical Application: Git, Linux, SAS, AWS ML/S3/EC2, Docker, Amazon MTurk, GPU Computing, Unity3D, Shell

Award

• INFOCOM Student Grant   • Academic Tuition Scholarship, University of Rochester   • University Scholarship, Chongqing University

SELECTED PUBLICATIONS

[1] **Z. Kou**, L. Shang, Y. Zhang, D. Wang. "HC-COVID: A Hierarchical Crowdsource Knowledge Graph to Explainable COVID-19 Misinformation Detection." Proceedings of the ACM on Human-Computer Interaction (GROUP' 22)

[2] **Z. Kou**, Y. Zhang, L. Shang, and D. Wang. "FairCrowd: Fair Human Face Dataset Sampling viaBatch-Level Crowdsourcing Bias Inference." In IEEE/ACM International Symposium on Quality of Service (IWQoS' 21)

[3] Chen, L., Cui, G., Liu, C., Li, Z., **Z. Kou.**, Xu, Y. and Xu, C., 2020, August. Talking-head generation with rhythmic head motion. In European Conference on Computer Vision (ECCV'20)

[4] Zhang, D.Y.*, **Kou, Z.*** and Wang, D., 2021, May. FedSens: A Federated Learning Approach for Smart Health Sensing with Class Imbalance in Resource Constrained Edge Computing. In IEEE INFOCOM Conference on Computer Communications (INFOCOM' 21)

[5] **Z. Kou**, G. Cui, S. Wang, W. Zhao, and C. Xu. "Improve CAM with Auto-adapted Segmentation and Co-supervised Augmentation." In IEEE/CVF Winter Conference on Applications of Computer Vision (WACV' 21)

[6] **Z. Kou**, Zhang, D.Y., Shang, L. and Wang, D., 2020, December. "ExFaux: A Weakly Supervised Approach to Explainable Fauxtography Detection." In 2020 IEEE International Conference on Big Data (BigData' 20)