Ziyi Kou

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Personalized Generative AI / Trustworthy Computer Vision (Privacy, Safety) / Human 3D Pose Estimation / Online Recommender System

EDUCATION

PhD Degree, Computer Science **University of Notre Dame** **2020.8 – 2024.5**

Exchange Student of Information Science at University of Illinois Urbana-Champaign, 2021.8-2022.5.

Courses: Advanced Computer Algorithm, Computer Vision, etc. GPA 3.78.

Master's Degree, Computer Science **University of Rochester** **2018.9 - 2020.5**

Courses: Machine Learning, Advanced Computer Vision. Artificial Intelligence, etc. GPA 3.83.

Bachelor's Degree, Software Engineering **Chongqing University, China** **2014.9 - 2018.6**

Courses: Programming Language, Advanced Mathematics, Linear algebra, etc. GPA 3.51.

SKILLS

Python, Java, C++, PyTorch, Keras, Spark, DGL, MMCV, OpenCV, Amazon MTurk

WORK EXPERIENCE

Research Scientist **Meta, Reality Lab** (10301 Willows Rd NE, Redmond, WA 98052) **06/03/2024 - Present**

Responsibility: Participated in the research of intersection between 3D pose estimation and foundational deep learning model for human activity understanding in virtual reality.

Projects: a multi-sensor-modality 3D pose estimation natural network model for general human activity understanding by leveraging large-scale human-object interaction data.

Accomplishments: ongoing.

Research Scientist Intern **Meta, Reality Lab** (10301 Willows Rd NE, Redmond, WA 98052) **12/04/2023 – 03/08/2024**

Responsibility: Participated in the multimodality deep learning research of 3D pose estimation at Meta Reality Lab.

Projects: a 3D glove pose estimation model that takes raw RGB camera images from quest devices as input and outputs the parameters for hand reconstruction by leveraging the pretrained large computer vision models as prior knowledge.

Accomplishments: i) successfully completed the project and made the live presentation in company wide; ii) received return full-time offer.

Applied Scientist Intern **Amazon** (320 108th Ave NE, Bellevue, WA 98004) **05/22/2023 – 08/25/2023**

Responsibility: Participated in the visual-language deep learning research of customer shopping behavior for online Amazon items.

Projects: a deep graph neural network-based customer shopping modeling pipeline to interpret their shopping behaviors in out-of-stock scenario by leveraging multimodality contents of shopping items selected by the customers.

Accomplishments: i) successfully completed the project and drafted the paper for Amazon internal review; ii) received return internship offer.

Machine Learning Engineer Intern **Instacart** (REMOTE. 50 Beale St #600, San Francisco, CA 94105) **10/31/2022 – 02/03/2023**

Responsibility: Participated in the design and development of large-scale customer shopping recommendation system.

Projects: a multi-relational graph based recommendation pipeline to recommend online products from specific sellers to the target users based on the advanced user-seller-product interactions.

Accomplishments: successfully completed the project and published the corresponding paper to CIKM2023, a top data mining research conference.

Machine Learning Engineer Intern **GoDaddy Inc.** (REMOTE. 2155 E GoDaddy Way, Tempe, AZ 85284) **05/16/2022- 08/05/2022**

Responsibility: Participated in the design and development of online customer recommendation system.

Projects: i) a machine learning graph based recommendation pipeline for online shopping by leveraging customer rank information and historical customer-product purchase data; ii) a deep semantic-aware information retrieval pipeline for customer service center to identify most matched answers to the customers' questions.

Accomplishments: i) moved the information retrieval pipeline to production; ii) received return internship offer.

Research Assistant **University of Rochester** (250 Hutchison Rd, Rochester, NY 14620) **10/21/2019 – 04/03/2020**

Responsibility: Lead the design and development of an anomaly detection framework for glass manufacture at Corning.

Projects: a video-level anomaly detection pipeline to detect potential paper folding issue during the glass manufacture process.

Accomplishments: Successfully completed the project and extended the collaboration between the school lab and Corning.

SELECTED PUBLICATIONS

Automating Portrait Generation for Zero-Shot Story Visualization with Multi-Character Interactions **KDD'24**

A zero-shot story visualization framework based on LLMs and graph driven diffusion personalization [AC 24.0%] [Link]

Generating Fake Identities for Fair Face Recognition based on Identity-Protected Segments **CIKM'24**

A fairness-privacy-aware face recognition framework based on adversarial learning and diffusion based face inpainting. [AC 23.0%] [Link]

Modeling Sequential Collaborative User Behaviors for Seller-aware Next Basket Recommendation **CIKM'23**

A basket-level recommender system based on graph transformer modeling and a novel triplet pairwise loss [AC 24.0%] [Link]

Few-shot Low-resource Knowledge Graph Completion with Multi-view Task Representation Generation **KDD'23**

A few-shot learning framework for knowledge graph completion based on multi-view task representation [AC 22.3%] [Link]

A Controllable Prompt Adversarial Attacking Framework for Black-Box Text2Image Models **IJCAI'23**

A adversarial prompt attacking framework for black-box text-to-image diffusion model based on gradient sampling [AC 15.0%] [Link]

A Crowd-AI Duo Relational Graph Learning Framework Towards Social Impact Aware Photo Classification **AAAI'23**

A social impact aware image classification model based on multi-relational graph modeling and crowdsourcing [AC 19.6%] [Link]

A Web Crowdsourcing Based Face Partition Approach Towards Privacy-Aware Face Recognition **WebConf'22**

A privacy-aware face recognition framework based on human face segmentation and graph neural network [AC 17.7%] [Link]

A Duo-Generative Approach to Explainable Multimodal COVID-19 Misinformation Detection **WebConf'22**

A multi-modal misinformation detection framework based on latent feature reconstruction and cross-modal attention [AC 17.7%] [Link]

Human-AI Interaction Towards Natural Language Explanation based COVID-19 Misinformation Detection **IJCAI'22**

A human-in-loop misinformation detection framework based on natural language feature encoding and crowdsourcing [AC 12.6%] [Link]

A Crowdsourcing Multi-Modal Knowledge Graph Approach to Explainable Fauxtography Detection **CSCW'22**

A multi-modal misinformation detection framework based on multi-modal knowledge graph and face recognition [AC 24.0%] [Link]

Contrastive Domain Adaptation for Early Misinformation Detection: A Case Study on COVID-19 **CIKM'22**

A misinformation detection framework based on contrastive learning and domain adaptation [AC 23.3%] [Link]

Improve CAM with Auto-adapted Segmentation and Co-supervised Augmentation **WACV'21**

A weakly-supervised objection localization framework based on label-wise neuron activation [AC 34.5%] [Link]

Learning VQA towards Understanding Web Instructional Videos **WACV'21**

A video-question-answering framework based on a recurrent graph neural network [AC 34.5%] [Link]

Talking-head generation with rhythmic head motion **ECCV'20**

A multi-modal talking-head generative framework based on 3D face wrapping and meta motion learning [AC 27.1%] [Link]

AWARDS

- CSE Outstanding Research Award, University of Notre Dame, 2023
- 3rd Winner of Ebay University Machine Learning Competition: Simi-Supervised Name Entity Recognition, 2022
- Winner of Sequential Dynamic Molecular Prediction AI Competition, Argonne US National Lab, 2022
- Bronze Medal for H&M Fashion Recommendations, Kaggle 2022
- PhD Student Travel Grants, IEEE INFOCOM and IEEE BigData
- Graduate Tuition Scholarship, University of Rochester 2018
- Department-level Student Scholarship, Chongqing University 2018
- Department-level Honor Graduate, Chongqing University 2018