Ruize Xu

Homepage: https://rick-xu315.github.io

Email : rx2246@columbia.edu
Mobile : +1-917-407-9605

Education Experience

- **Columbia University, NY** Jan. 2024 - May 2025 (expected)
  MS in Computer Science-Thesis Track
  GPA: 4.165/4.0, Advisor: Zhou Yu
- **Renmin University, China** (Ranked 31th globally on **CSRankings 2024**) Sep. 2019 - Jun. 2023
  BS in Data Science
  GPA: 3.77/4.0, Advisor: Di Hu
- **University of California, Davis, CA** Jan. 2022 - Apri 2022
  Exchange Student
  GPA: 3.9/4.0

Research Experience

- **Columbia University, NY** Feb 2024 - present
  - **Mentors**: Junfeng Yang, Zhou Yu
  - **Topic**: **A.** We design intermediate guidance at diffusion internals to attack generated-image detectors that leverage the purification property of diffusion models under both black and white box settings. **Paper presented at CVPR 2024 Workshop**. **B.** We build strong baselines using efficient architectures, contrastive learning with hard negative mining, and synthetic resumes generated by finetuned Qwen2.5-14B to enhance training for long-context resume-job matching tasks. **Paper submitted to ARR rolling review.**
- **Alibaba Security Group, China** July 2023 - Dec. 2023
  - **Advisor**: Pengda Qin
  - **Topic**: We build supervised finetuning dataset to train Large Vision-language Models (7B and 14B level) for general multi-image QA and achieve 1400+ scores on MME benchmark. We expand LVLMs with Mixture-of-Expert models too improve its performance on unseen tasks (50% accuracy enhancement) while mitigating catastrophic forgetting (95% performance maintained).
- **Renmin University, China** (Undergraduate Research) Jun 2021 - Jun 2024
  - **Advisor**: Zhicheng Dou
  - **Topic**: We investigate critical challenges in generative retrieval and retrieval augmented generation. **2 first-author papers at CIKM and CCL** about learning representations like document identifiers (DocID) for generative retrieval, and **1 open-source project with 200 Stars at GitHub** about retrieval augmented generation.

Publication List

1. Yun-yun Tsai, **Ruize Xu**, Chengzhi Mao, Junfeng Yang. From Detection to Deception: Are AI-Generated Image Detectors Adversarially Robust?, **CVPR 2024 Responsible Generative AI Workshop**. (Paper, Long version submitted to CVPR 2025)
2. **Ruize Xu***, Aymen Kallala*, Jacklyn Tsai. Classifier guided Beam-Search to reduce Large Language Model's hallucinative behavior, **Preprint**. (Paper)
3. Kenan Jiang, Xuehai He, **Ruize Xu**, Xin Eric Wang. Comclip: Training-free compositional image and text matching, **NAACL 2024**. (Paper)
4. **Ruize Xu**, Ruoxuan Feng, Shi-Xiong Zhang, Di Hu. MMcosine: Multi-modal cosine loss towards balanced audio-visual fine-grained learning, **ICASSP 2023**. (Paper and Code)

Research Interest

Interpretability:
Mechanistic and Data-centric Interpretation, Causal Inference,
Robustness:
Adversarial Attack, Inference-time-adaption, Hallucinatoin, Data Sythesis with LLMs

Industry Experience

- **Alibaba Security Group, China** July 2023 - Dec. 2023
  - **Advisor**: Pengda Qin
  - **Topic**: We build supervised finetuning dataset to train Large Vision-language Models (7B and 14B level) for general multi-image QA and achieve 1400+ scores on MME benchmark. We expand LVLMs with Mixture-of-Expert models too improve its performance on unseen tasks (50% accuracy enhancement) while mitigating catastrophic forgetting (95% performance maintained).

- **Baidu Vision, China** Nov. 2022 - Jun. 2023
  - **Advisor**: Yumeng Zhang
  - **Topic**: We leveraged tri-plane decomposition to improve NeRF on reconstructing dynamic unbounded scenes in autonomous driving scenarios and reached 23 PSNR score on NuScenes Benchmark

Honors and Awards

- Mathematical Contest in Modeling/Interdisciplinary Contest in Modeling. Meritorious Winner (top 7%) 2022
- RUC 1st Prize Scholarship for Academic Excellence (top 5%)) 2022
- RUC President Scholarship for Exchange Students 2022
- UCD Certificate of Academic Excellence 2022
- RUC Undergraduate Research Fund 2022
- RUC Dean's MingDe Data Science Talents Nomination (17 out of 321) 2021
- Academic Excellence Award (Top 3% GPA). *Renmin University.* 2021,2020
- National 1st Prize of The Chinese Mathematics Competitions 2020

Service

- **Reviewer**: ICASSP 2024
- Table Tennis School Team: RUC&Columbia

Language and Skills

Programming Languages: C/C++, Python, R (dplyr, ggplot2), SQL, Matlab, HTML/CSS
Tools/Frameworks:Linux, Git, Hadoop, Spark, HDFS, Flask, Bootstrap, LaTeX
Packages: PyTorch, Tensorflow/Keras, Transformers, WandB, Horovod, Deepspeed, Fastmoe, Diffusers, OpenCV, NumPy, Pandas, Scipy, Sklearn, Matplotlib, Seaborn, Pyspark