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RESEARCH INTEREST

My current research interests span **human motion understanding**, including 2d/3d pose estimation and action recognition; and **trustworthy AI**, including adversarial attack/defence and AI privacy.

EDUCATION

The Chinese University of Hong Kong

PhD of Computer Science and Engineer (PhD candidate)

Hong Kong, China

Oct. 2020 – Present

Beihang University

B.E. in Computer Science and Technology from SHENYUAN Honors College

Beijing, China

Sep. 2016 – Jun. 2020

EXPERIENCE

Research Intern

Digital Twin, SenseTime

Mar. 2022 – Present

Beijing, China

- Conducted research on Neural Radiance Field (NeRF) for animatable human.

Research Intern

Institute of Automation, Chinese Academy of Sciences

Jul. 2019 – Nov. 2019

Beijing, China

- Conducted research on Network Architecture Search (NAS) algorithm.
- Conducted research on 3D Object Detection with Point Clouds and Images.
- Implemented parallel code framework design on Pytorch from GPU; data visualization and analysis.

Research Intern

State Key Laboratory of Software Development Environment, Beihang University

Sep. 2018 – Jun. 2019

Beijing, China

- Conducted research on few-shot learning and object detection.

PUBLICATION

- [1] Minhao Liu, Ailing Zeng, Qiuxia Lai, **Ruiyuan Gao**, Min Li, Jing Qin, and Qiang Xu. “T-WaveNet: A Tree-Structured Wavelet Neural Network for Time Series Signal Analysis”. In: *The Tenth International Conference on Learning Representations*. 2022.
- [2] Yijun Yang, **Ruiyuan Gao**, Yu Li, Qiuxia Lai, and Qiang Xu. “What You See is Not What the Network Infers: Detecting Adversarial Examples Based on Semantic Contradiction”. In: *Network and Distributed System Security Symposium (NDSS)*. 2022.
- [3] Yijun Yang, **Ruiyuan Gao**, and Qiang Xu. “Out-of-Distribution Detection with Semantic Mismatch under Masking”. In: *European Conference on Computer Vision*. Springer. 2022.
- [4] Ailing Zeng, Xuan Ju, Lei Yang, **Ruiyuan Gao**, Xizhou Zhu, Bo Dai, and Qiang Xu. “DeciWatch: A Simple Baseline for 10x Efficient 2D and 3D Pose Estimation”. In: *European Conference on Computer Vision*. Springer. 2022.
- [5] Yaran Chen*, **Ruiyuan Gao***, Fenggang Liu, and Dongbin Zhao. “ModuleNet: Knowledge-Inherited Neural Architecture Search.” In: *IEEE transactions on cybernetics* PP (2021). ISSN: 2168-2275 2168-2267. DOI: 10.1109/TCYB.2021.3078573. PMID: 34097629.
- [6] **Ruiyuan Gao**, Hailong Yang, Shaohan Huang, Ming Dun, Mingzhen Li, Zerong Luan, Zhongzhi Luan, and Depei Qian. “PriPro: Towards Effective Privacy Protection on Edge-Cloud System running DNN Inference”. In: *2021 IEEE/ACM 21st International Symposium on Cluster, Cloud and Internet Computing (CCGrid)*. IEEE. 2021, pp. 334–343.

- [7] Yijun Yang, **Ruiyuan Gao**, Yu Li, Qiuxia Lai, and Qiang Xu. “MixDefense: A Defense-in-Depth Framework for Adversarial Example Detection Based on Statistical and Semantic Analysis”. In: *arXiv preprint arXiv:2104.10076* (2021).
- [8] Ailing Zeng, Minhao Liu, Zhiwei Liu, **Ruiyuan Gao**, and Qiang Xu. “Hop-Aware Dimension Optimization for Graph Neural Networks”. In: *arXiv preprint arXiv:2105.14490* (2021).
- [9] Yaran Chen, Haoran Li, **Ruiyuan Gao**, and Dongbin Zhao. “Boost 3-D Object Detection via Point Clouds Segmentation and Fused 3-D GIoU- L_1 Loss”. In: *IEEE Transactions on Neural Networks and Learning Systems* (2020).
- [10] **Ruiyuan Gao**, Ming Dun, Hailong Yang, Zhongzhi Luan, and Depei Qian. “Privacy for Rescue: A New Testimony Why Privacy is Vulnerable In Deep Models”. In: *arXiv preprint arXiv:2001.00493* (2019).

(* for equal contribution)

COMPETITION

ASC Student Supercomputer Challenge | *Python, Docker, Distributed Programming* Jan. 2018 – Apr. 2019

- As a core member on the team of Beihang University, responsible for AI topics.
- **1st places** in tasks of Single Image Super Resolution (1/300+) and Face Super Resolution (1/20).
- First Prize & Highest LINPACK awards.

AWARDS & SCHOLARSHIPS

- Full Postgraduate Studentship, The Chinese University of Hong Kong.
- Outstanding Graduate in Beijing.
- Second-class Undergraduate Merit Scholarship, Beihang University.
- Special Undergraduate Merit Scholarship for Discipline Competition, Beihang University.
- Meritorious Winner, American College Students Mathematical Modeling Competition.

TECHNICAL SKILLS AND OTHER

Languages: Python, C/C++, Java, Verilog

Frameworks: Pytorch, Tensorflow, Rails

Developer Tools: Linux and shell, Git, Docker, VS Code, Visual Studio, PyCharm, L^AT_EX

English: TOEFL 102, GRE V151 Q168 W4.0