SHENYUAN GAO

Ph.D. Student at HKUST
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EDUCATION

The Hong Kong University of Science and Technology (HKUST) *2022 - 2026 (expected)*
Ph.D. in Electronic and Computer Engineering
Advised by Prof. Jun Zhang (IEEE Fellow)

Huazhong University of Science and Technology (HUST) *2018 - 2022*
B.Eng. in Electronic Information Engineering GPA: 3.9/4.0
Advanced Class (Elite Program for Information Science, 30 selected from 400 freshmen) Overall Rank: 1/30

RESEARCH INTEREST

Neural Generation Novel Scene Synthesis, Implicit Neural Representation, Text2Image Diffusion Model
Multi-Agent System Cooperative V2X Perception, Collaboration Learning for MARL & FL
Video Understanding Object Tracking & Segmentation, Correspondence Learning

PUBLICATION

CDVCT: Content-aware Decoder-free Video Compression Transformer
Xinjie Zhang, **Shenyuan Gao**, Jiawei Shao, Jun Zhang
Submitted to IEEE/CVF International Conference on Computer Vision (**ICCV**), 2023.

Generalized Relation Modeling for Transformer Tracking
Shenyuan Gao, Chunluan Zhou, Jun Zhang
Accepted by IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.

AiATrack: Attention in Attention for Transformer Visual Tracking
Shenyuan Gao, Chunluan Zhou, Chao Ma, Xinggang Wang, Junsong Yuan
Accepted by European Conference on Computer Vision (**ECCV**), 2022.

Comprehensive Study on Visual Object Tracking under Explosion of Deep Learning: Survey and Experiments
Zikai Song, Yuzhe Shi, **Shenyuan Gao**, Junqing Yu, Yi-Ping Phoebe Chen
Submitted to ACM Computing Surveys (**CSUR**) in 2020.

EXPERIENCE

Shanghai Artificial Intelligence Laboratory, OpenDriveLab April 2023 - present
Research Intern *Shanghai, China*

- Leader: Dr. Hongyang Li
- Working on autonomous driving foundation model.

The Hong Kong University of Science and Technology September 2022 - present
Research Postgraduate Program *Hong Kong SAR, China*

- Advisor: Prof. Jun Zhang (IEEE Fellow)
- Worked on video object tracking and neural video compression.
- Working on multi-agent cooperative perception for autonomous driving scenarios.
- Proposed a generalized formulation of attention-based relation modeling for tracking. Accepted by CVPR 2023.
- Proposed a content-aware masked image modeling style for bidirectional prior interaction. Submitted to ICCV 2023.

Huazhong University of Science and Technology March 2022 - Jun 2022
Final Year Project for Bachelor Degree *Wuhan, China*

- Advisor: Prof. Peng Yang
- Worked on video object tracking and efficient deep learning.
- Proposed a slimmable tracker with hierarchical weight sharing. Awarded as outstanding graduation thesis.

University at Buffalo July 2021 - March 2022
Summer Research Intern *New York, United States (Remote)*

- Advisor: Prof. Junsong Yuan (IEEE Fellow)
- Worked on video object tracking.
- Proposed a novel Attention in Attention block to facilitate correspondence learning. Accepted by ECCV 2022.

The University of Hong Kong, MMLab July 2021 - Augest 2021
HKU CS Summer Research Internship Programme *Hong Kong SAR, China (Remote)*

- Advisor: Prof. Ping Luo
- Worked on video object tracking and visual grounding.
- Completed the research project with full stipend award. Paused the further progress due to limited computing resource.

Shanghai Jiao Tong University January 2021 - March 2021
Undergrad Research Assistant *Shanghai, China*

- Advisor: Prof. Chao Ma
- Worked on video object tracking & segmentation.
- Explored the application of Transformer. Proposed a graph-based spatio-temporal memory update mechanism.

Huazhong University of Science and Technology September 2019 - December 2020
Undergrad Research Assistant *Wuhan, China*

- Advisor: Prof. Xinggang Wang
- Worked on object detection & tracking.
- Completed a survey paper as co-author. Reproduced about 30 representative algorithms on several benchmarks.

HONORS AND AWARDS

- RedBird PhD Scholarship 2022-present
- Full Postgraduate Scholarship 2022-2026
- Outstanding Graduate 2022
- Outstanding Graduation Thesis 2022
- Outstanding Undergraduate in Terms of Academic Performance (**Top 1%**) 2019
- National Scholarship (**Top 2%**) 2019

ACADEMIC SERVICES

Reviewer
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2023)
Neural Information Processing Systems (NeurIPS 2023)
IEEE Transactions on Multimedia (TMM)
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

Teaching
ELEC 3100: Signal Processing and Communications (Spring 2023)

MISC

During my undergraduate, I built and launched a personal website by myself.
So far, I have posted about 177,000 words of notes and already received 110,000 views from 73,000 unique visitors.

I am a big fan of One Piece comics (not its animation).
Many of my belongings contain One Piece elements, including 6 different T-shirts with One Piece characters.

I am also used to going to the gym in the morning (09:00 - 09:55), and running or swimming in the evening.
My dream is to build 8-pack abs like the shape of chocolates (aim high, probably 6-pack in the end).