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

Autonomous Agent Autonomous Driving, Embodiment, Generalist Agent
Generative Model World Models, Diffusion Models, Video Generation

PUBLICATION

Generalized Predictive Model for Autonomous Driving
Jiazhi Yang*, **Shenyuan Gao***, Yihang Qiu*, Li Chen, Tianyu Li, Bo Dai, Kashyap Chitta, Penghao Wu, Jia Zeng, Ping Luo, Jun Zhang, Andreas Geiger, Yu Qiao, Hongyang Li
Accepted by IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024.

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.

EXPERIENCE

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

- Leader: Dr. Hongyang Li
- Working on autonomous driving foundation models.
- Propose a driving predictive model with strong generalization ability to diverse scenarios and applications.

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.
- Proposed a content-aware masked image modeling style for bidirectional prior interaction.

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.

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 and 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 and tracking.
- Completed a survey paper as co-author. Reproduced about 30 representative algorithms on several benchmarks.

HONORS AND AWARDS

- Full Postgraduate Scholarship 2022-2026
- RedBird PhD Scholarship 2022-2023
- 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**)
Conference on Neural Information Processing Systems (**NeurIPS**)
European Conference on Computer Vision (**ECCV**)
International Conference on Pattern Recognition (**ICPR**)
IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**)
IEEE Transactions on Multimedia (**TMM**)
IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**)
Image and Vision Computing Journal (**IMAVIS**)

Teaching
Advanced Deep Learning Architectures (**COMP 5214 / ELEC 5680**)
Signal Processing and Communications (**ELEC 3100**)

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 132,000 views from 89,000 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).