

# 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**, Chunlun 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**, Chunlun 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

*Research Intern*

April 2023 - present

*Shanghai, China*

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

### The Hong Kong University of Science and Technology

*Research Postgraduate Program*

September 2022 - present

*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***Final Year Project for Bachelor Degree*

March 2022 - Jun 2022

*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***Summer Research Intern*

July 2021 - March 2022

*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***HKU CS Summer Research Internship Programme*

July 2021 - August 2021

*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***Undergrad Research Assistant*

January 2021 - March 2021

*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***Undergrad Research Assistant*

September 2019 - December 2020

*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**

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|--------------------------------------------------------------------------------|--------------|
| • RedBird PhD Scholarship                                                      | 2022-present |
| • Full Postgraduate Scholarship                                                | 2022-2026    |
| • Outstanding Graduate                                                         | 2022         |
| • Outstanding Graduation Thesis                                                | 2022         |
| • Outstanding Undergraduate in Terms of Academic Performance ( <b>Top 1%</b> ) | 2019         |
| • National Scholarship ( <b>Top 2%</b> )                                       | 2019         |

**ACADEMIC SERVICES**

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**Reviewer**

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2023)

Conference on 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

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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).