

# SHENYUAN GAO

Ph.D. Student ◇ 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

### Video Analysis

Object Tracking & Segmentation, Correspondence Learning

### Multi-Agent Systems

Cooperative V2X Perception, Collaboration Learning for MARL & FL

### Neural Generation

Image & Video Compression, Novel Scene Synthesis, Implicit Neural Representation

## PUBLICATION

### CDVCT: Content-aware Decoder-free Video Compression Transformer

Xinjie Zhang, **Shenyuan Gao**, Jiawei Shao, Jun Zhang

Submitted to IEEE International Conference on Computer Vision (ICCV), 2023.

### Generalized Relation Modeling for Transformer Tracking

**Shenyuan Gao**, Chunlun Zhou, Jun Zhang

Accepted by IEEE 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

April 2023 - present

Research Intern

Shanghai, China

- Leader: Dr. Hongyang Li
- Worked 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.
- 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. Xingang 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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**Conference Reviewer**

CVPR 2023

**Journal Reviewer**

TCSVT

**Teaching Assistant**

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.

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 have 8 chocolate-like abdominal muscles.