

# Sizhe Song

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## EDUCATION

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**The Hong Kong University of Science and Technology** *Sept. 2021 – Now, Hong Kong*

- Master of Philosophy (MPhil) in Computer Science
- Supervisor: Shueng-Han Gary Chan

**The Hong Kong University of Science and Technology** *Sept. 2017 – Jul. 2021, Hong Kong*

- Bachelor of Science (BSc) in Computer Science and General Mathematics
- CGA: 3.769 / 4.3, appeared on Dean's List in 4 out of 5 long semesters.

**Purdue University** *Jan. 2020 – May. 2020, West Lafayette, IN, USA*

- One-semester exchange program.
- Coursework: Computer Security, Machine Learning, Abstract Algebra.

## RESEARCH EXPERIENCES

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**Video Crowd Analysis of Count and Flow** *Apr 2022 – Now*

A video crowd counting work that incorporates crowd flow information, submitted to ICCV 2023. I am the first author of this work.

**A Tree-Based Structure-Aware Transformer Decoder for Image-To-Markup Generation** *Sept 2021 – Apr 2022*

Accepted to ACM MM 2022, Authors: Shuhan Zhong, **Sizhe Song**, Guanyao Li, S.-H. Gary Chan. [\[Paper\]](#)

- Proposed a novel model for image to markup generation that is capable of processing the structural information using trees. Efficiently integrate the tree module into transformer by proposing a tree-structure attention module.
- Personal Contribution: Participated in network design. Conducted all the experiments on the Chemical markup language datasets.

**Semi-Supervised Few-shot Atomic Action Detection** *May 2020 – Nov. 2020*

Available on arXiv. Authors: **Sizhe Song**<sup>\*</sup>, Xiaoyuan Ni<sup>\*</sup> (equal contribution), Yu-Wing Tai, Chi Keung Tang.

HKUST Final Year Project supervised by Prof. Chi Keung Tang. [\[arXiv Link\]](#) [\[Project Link\]](#)

- Proposed a novel model for few-shot atomic action recognition, alleviated human annotation effort. Incorporated unsupervised learning for better feature extraction. Designed attention pooling and multi-head relation to enhance feature refinement and comparison.
- Personal Contribution: Participated in data processing and augmentation. Researched and designed the attention pooling module, implemented the model, and performed experiments on different atomic action datasets.

## WORK EXPERIENCES

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**Teaching Assistant** *Feb. 2022 – Dec. 2022, Hong Kong*

- Organization: HKUST, School of Engineering, CSE Department.
- Course: COMP2011 - Programming with C++ (2022 Spring)  
COMP2012H - Honors Object-Oriented Programming and Data Structures. (2022 Fall)
- Duty: Design the last programming assignment (13% of the final grade), explain lab material to students, answer their questions, report frequent mistakes to the instructor after class. For COMP2012H, I also design one out of four long questions for the final exam (24% of the final exam).

## AWARDS & HONOURS

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**3<sup>rd</sup> Prize in The 6<sup>th</sup> Hong Kong University Student Innovation and Entrepreneurship Competition** *May. 2020*

- Held by HKNCA Innovation & Entrepreneurship Centre.
- Worked in a team of four to produce a video-based security system.
- Utilized human identification and tracking to predict visualize real-time human density.

**HKUST Study Abroad Sponsorship** *Jun. 2019*

- Offered by HKUST Study Abroad Office for Exchange Programs.

**Dean's List Award** *Apr. 2019*

- Offered by School of Engineering, HKUST.
- Offered to students with TGA over 3.7 in two of the past three semesters.

**First Year Full Admission Scholarship** *Sept. 2017*

- Offered by Undergraduate Recruitment and Admissions Office, HKUST.

## **SKILLS**

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Programming: Python, C/C++, Java, SQL, HTML, CSS, JavaScript.

Tools: PyTorch, OpenCV, LaTeX, Markdown, Unix, Git.

Languages: English (Good, GRE=157+170+4, TOEFL=113), Mandarin (Native).