

# TAO ZHANG

Department of Electronic and Computer Engineering, HKUST, Hong Kong, China

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## EDUCATION

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**The Hong Kong University of Science and Technology** Sep. 2022-present, Hong Kong, China  
Master of Philosophy in Electronic and Computer Engineering  
Supervisor: Professor Zhiyao Xie  
Research Interests: Machine Learning, EDA, VLSI, AI Chip  
GPA: 3.1/4.3

**Sun Yat-sen University** Sep. 2018 – Jul. 2022, Guangzhou, China  
Bachelor of Engineering in Electronic Information Science and Technology  
GPA: 3.6/4

## RESEARCH AND DEVELOPMENT EXPERIENCE

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**Hong Kong University of Science and Technology** Hong Kong  
M.Phil. Student supervised by Prof. Zhiyao Xie Sep.2022-Present

### Explainable ML Solutions in Circuit Design Flow

- Propose a new technique to explain each ML prediction at the resolution level of circuit elements. This is the first research effort to explain ML predictions on circuit layouts. It provides a significantly more reasonable, useful, and efficient explanation for prediction.
- A first-authored paper submitted to IEEE/ACM Asia and South Pacific Design Automation Conference (ASP-DAC) 2024. It is the top conference in electronic design automation.

### Security and Reliability Challenges in ML for EDA

- Study and summarize the latest literature about the security and reliability challenges in ML for EDA. Work with Prof. Xie to write an updated survey paper on this topic.
- A second-authored (first-student-author) invited paper accepted by the International Symposium on Quality Electronic Design (ISQED) 2023.

### Student Assistant for IEEE CEDA's EDATHon 2022 in Hong Kong

- Help Prof. Xie to prepare Problem 2 “Layout Hotspot Detection with Machine Learning Techniques” for EDATHon, the largest annual EDA contest in Hong Kong.
- Responsible for dataset collection, coding framework preparation, dataset and problem documentation, consultation, and online grading.

**Sun Yat-sen University** Shenzhen, China  
Research Assistant advised by Prof. Liang Wang Oct.2020-June.2022

### Safety inspection and recognition based on YOLO v5 at construction site

- Collect data to make our own dataset for conducting experiments.
- Design Algorithms to address issues regarding instant recognition of safety helmets.
- A paper as the primary author was submitted.

**City University of Hong Kong** Hong Kong  
Summer Intern July. 2021 – Oct.2021

### Internet of Vehicles

- Design the vehicle path planning algorithms for real scenarios.

- Build and test the collaborative perception model used for lane prediction.
- Build models of vehicles and roadside units in time-varying wireless networks.
- Design the dynamic correlation mechanism between vehicles and roadside units in time-varying wireless networks with channel state.

## PUBLICATIONS

- **Tao Zhang**, Haoyu Yang, Kang Liu, Zhiyao Xie. “APPLE: An Explainer of ML Predictions on Circuit Layout at the Circuit-Element Level”, accepted by *IEEE/ACM Asia and South Pacific Design Automation Conference (ASP-DAC)*, 2024.
- **Tao Zhang**, Haoyu Yang, Kang Liu, Zhiyao Xie. “Explainability of Machine Learning Models for Photolithography Hotspot Detection”, preparing to submit to *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems(TCAD)*, 2023.
- Zhiyao Xie, **Tao Zhang**, Yifeng Peng. “Security and Reliability Challenges in Machine Learning for EDA: Latest Advances”, Invited Paper, *International Symposium on Quality Electronic Design (ISQED)*, 2023.
- Weihong Jiang, Xieyang Su, **Tao Zhang**, Shengchun Wang, Liang Wang. “Intelligent Construction Site Violence Real-time Comprehensive Monitoring”, under review for *Elsevier Engineering Structures*.

## SELECTED AWARDS AND HONORS

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|---------------------------------------------------|-----------|
| • Excellent Student Cadre, SYSU                   | 2020      |
| • Ethic Award & Outstanding Volunteer, SYSU       | 2021      |
| • Student Award for Research and Innovation, SYSU | 2021      |
| • Outstanding Academic Scholarship, SYSU          | 2021      |
| • Postgraduate Scholarship, HKUST                 | 2022,2023 |

## TEACHING EXPERIENCE

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|-----------------------------------------------------------------------|------|
| • TA of ELEC2350, the Hong Kong University of Science and Technology. | 2023 |
| ✧ Introduction to Computer Organization and Design                    |      |

## ADDITIONAL INFORMATION

### Extracurricular Experiences

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|--------------------------------------------------------------------------|-----------|
| • Participate in volunteer activities for a total of more than 500 hours | 2019-2022 |
| • Serve as class monitor                                                 |           |
| • Student helper: EDathon 2022, HKUST ICDC Annual Symposium              |           |

### Computer Skills

- Python, PyTorch, MATLAB, C, Latex, Verilog

### Languages

- Mandarin Chinese(native), English (IELTS 7.0)