Yonghao Tan

1088 Xueyuan Avenue, Shenzhen 518055, P.R. China
Phone: +8618933015305
E-mail: tanyh2019@mail.sustech.edu.cn, yonghaot1017@gmail.com

Education

September 2019-Present **Undergraduate /** Southern University of Science and Technology
Shenzhen, Guangdong, China

- Microelectronics, Experimental Class, School of Microelectronics

September 2016-June 2019 **Graduate /** Shimen Middle School
Foshan, Guangdong, China

Research Interests

- Hardware acceleration for vision algorithms
- AI accelerator
- Simultaneous localization and mapping (SLAM)
- High-performance and low-power VLSI circuit design

Academic Performance & Standardized Test

Overall GPA: 3.77 /4.0 **Rank:** 11/79
TOEFL iBT: Total 102 Reading 25; Listening 26; Speaking 25; Writing 26

Research Experience

November 2021-Present **Research Project /** Transformer based co-design AI accelerator
Southern University of Science and Technology, Shenzhen, China *Mentor: Prof. Fengwei An*
The Hong Kong University of Science and Technology, Hongkong, China *Mentor: Prof. Tim CHENG Kwang-Ting*

- Hardware/Software collaborative optimization of Transformer-based architecture for vision applications
- Implement an energy-efficient Transformer-based accelerator for specific vision applications on the FPGA platform.

April 2021-Present **Research Project /** ASIC design of SLAM accelerator in 28nm CMOS technology
Southern University of Science and Technology, Shenzhen, China *Mentor: Prof. Fengwei An*

- Propose a reconfigurable coprocessor with an instruction set which support full functionality of operations in SLAM algorithms.
- Propose a reconfigurable visual-inertial odometry accelerator and implemented it on FPGA platform which can process data from image sensor and inertial measurement unit for trajectory output in real-time at 160MHz and 110fps.
- Optimize the hardware architecture and perform back-end design for ASIC development.

March 2022-May 2022 **Research Project /** ASIC design of stereo depth coprocessor in 28nm CMOS technology
Southern University of Science and Technology, Shenzhen, China *Mentor: Prof. Fengwei An*

- In charge of back-end design of the Census Transform module of the coprocessor.

October 2020-January 2021 **Research Project /** Auxiliary detection equipment for scoliosis
Southern University of Science and Technology, Shenzhen, China *Mentor: Prof. Fengwei An*

- Collect and label skeletal and gait data for children and youth with scoliosis.
- Establish graph neural network model to predict scoliosis probability.

Publications

2022 **Yonghao Tan**, Huanshihong Deng, Mengying Sun, Minghao Zhou, Yifei Chen, Lei Chen, Chao Wang, Fengwei An. A Reconfigurable Coprocessor for Simultaneous Localization and Mapping Algorithms in FPGA. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 10.1109/TCSII.2022.3198759.

2022 **Yonghao Tan**, Mengying Sun, Huanshihong Deng, Haihan Wu, Minghao Zhou, Yifei Chen, Zhuo Yu, Lei Chen, Chao Wang, Fengwei An. A Reconfigurable Visual-Inertial Odometry Accelerator with High Area and Energy Efficiency for Autonomous Mobile Robots. *Sensors*, under review.

Awards

April 2022 **Undergraduate Innovation and Entrepreneurship Training Programs**

December 2021 **Shenzhen Longsys Electronics Company Award. (Top 2% in School of Microelectronics)**

December 2021 **The First Prize of 2021 National College Students FPGA Innovation Design Competition (Top 22 in 1341 teams)**

October 2021 **The First Prize of 2021 International Competition of Autonomous Running Robots (Top 1 of 34 teams in final match)**

September 2021 **Second-class Outstanding Students Scholarship**

July 2021 **Guangdong College Students' Scientific and Technological Innovation**

September 2020 **Second-class Outstanding Students Scholarship**

Skills

C, C++, Java, MATLAB, Python, Verilog

Languages

English(fluent), Mandarin(native), Cantonese(native)