

TAOYI WANG

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EDUCATION

Mathematics and Physics, Department of Physics, Tsinghua University 08/2016 - 06/2020
GPA: **3.84/4.00**, Ranking: **6/55**
PhD student, Department of Precision Instrument, Tsinghua University 09/2020 - present
GPA: **3.84/4.00**
TOEFL: **108**, GRE: **331 + 3.5**

PUBLICATION

A vision chip with complementary pathways for open-world sensing

Co-first Author, *Nature*, **Cover paper**, 2024.

Number of related patents: 29 application, with 11 having been authorized.

HASP: Hierarchical Asynchronous Parallelism for Multi-NN Tasks

Co-first Author, *IEEE Transactions on Computers*, 2024.

Brain-inspired multimodal hybrid neural network for robot place recognition

Contributing Author, *Science Robotics*, 2023.

Neuromorphic computing chip with spatiotemporal elasticity for multi-intelligent-tasking robots

Contributing Author, *Science Robotics*, 2022.

Wireless multilateral devices for optogenetic studies of individual and social behaviors

Contributing Author, *Nature Neuroscience*, 24.7 (2021): 1035-1045.

A Wireless, Implantable Optoelectrochemical Probe for Optogenetic Stimulation and Dopamine Detection

Contributing Author, *Microsystems & Nanoengineering*, 6.1 (2020): 1-12.

Inverse Design Strategies for 3D Surfaces Formed by Mechanically Guided Assembly

Contributing Author, *Advanced Materials* 32, 1908424 (2020).

TECHNICAL STRENGTHS

Computer Programming	C/C++, Python, MATLAB
Hardware Design Tools	Analog circuit design, Pixel design, Digital circuit design, Verilog
Computer Skills	CUDA & GPU performance analysis

RESEARCH EXPERIENCE

Brain-inspired vision sensor chip for open-world sensing

Department of Precision Instrument, Tsinghua University

08/2020 - 04/2024

Advisor: Prof. Rong Zhao and Prof. Luping Shi

- Proposed fundamental sensing paradigm and designed a novel vision sensor architecture;
- Designed and optimized pixel, analog circuit, and digital logic in our Vision sensor;
- Conducted measurement, and optimized image processing algorithms, and driver code to achieve high speed, high dynamic range, and high video quality with ultra-low bandwidth;

High-performance computing architecture for multi-neural-network acceleration

Department of Precision Instrument, Tsinghua University

04/2022 - 09/2023

Advisor: Prof. Rong Zhao

- Conducted the theoretical analysis of neuromorphic computing architecture for multi-NN acceleration;
- Conducted the comparison experiments between neuromorphic computing architectures, GPUs and Planaria.

Wireless Electroencephalogram(EEG) Recording System*Department of Electronic Engineering, Tsinghua University*

09/2019 - 05/2020

Advisor: Prof. Xing Sheng

- Programmed the Bluetooth SoC nRF52832 to process and transmit the signal from ADS1299;
- Designed miniaturized PCBs using Altium Designer;
- Analyzed EEG data using Python and MATLAB.

Wireless Powered Optogenetic Platform*Center for Bio-Integrated Electronics, Northwestern University*

07/2019 - 09/2019

Advisor: Prof. John A. Rogers

- Designed and fabricated the wireless powered system using Flexible PCB , micro-fabrication and Arduino for future experiments on flying animals;

Wireless Optoelectrochemical Probe for Optogenetic Stimulation and Dopamine Detection*Department of Electronic Engineering, Tsinghua University*

07/2018 - 01/2020

Advisor: Prof. Xing Sheng

- Developed electrochemical dopamine sensor and optoelectronic neural probe using micro-fabrication, conducted the improvement and *in vitro* characterization using cyclic voltammetry and amperometry;

WORK EXPERIENCE

Product Manager Intern*Department of Ecosystem, Beijing Xiaomi Mobile Software Co., Ltd.*

12/2019 - present

- Working on product definition of wearable products.

AWARDS AND SCHOLARSHIPS

New Academic Star, Tsinghua University	04/2024
Jingwei Hirain Scholarship for Excellence, Tsinghua University	12/2023
Dongfang Electric Corporation Scholarship for Excellence, Tsinghua University	12/2022
BaojiCity Scholarship for Excellence, Tsinghua University	12/2021
Graduates with distinction (Top 15%), Tsinghua University	11/2019
Ge-Ru Zheng Scholarship for Excellence (Top 20%), Tsinghua University	11/2019
Academic Excellence Scholarship, Tsinghua University	11/2018, 2019
Academic Progress Scholarship, Tsinghua University	11/2018
Guangzhou Phar. Holdings Limited Scholarship for Excellence (Top 15%), Tsinghua University	11/2017
The 32nd Chinese Physics Olympiad Gold Medal, Chinese Physical Society	11/2015

EXTRA-CURRICULAR ACTIVITIES

Leader of First-aid Skills Training, Red Cross Society of Tsinghua University, Beijing	10/2017
Teacher of the Course “Learning Experience”, 3 primary schools in Huozhou, Shanxi Province	07/2017
Organizer of Blood Donation, Red Cross Society of Tsinghua University, Beijing	05/2017
Teacher of Course “Chinese History”, Beijing Xiangshang primary school	03/2017 - 06/2017
Leader of ”Gratitude to Alma Mater” Program, Beijing National Day School, Beijing	11/2016 - 04/2017