Yanru Chen

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EDUCATION

University of California, San Diego, La Jolla, CA, USA

- Ph.D in Electrical and Computer Engineering (Advisor: Tajana Rosing) Sep 2024 – Present
  - Cumulative GPA: 3.6 / 4.0

Tsinghua University, Beijing, China

- M.S. in Electronic Information (Intelligent Manufacturing) Aug 2021 – Jun 2024
  - Cumulative GPA: 3.78 / 4.0

Jilin University, Changchun, Jilin, China

- B.E. in Electronic Science and Technology - Graduated with College Honors Aug 2017 – Jun 2021
  - Cumulative GPA: 3.53 / 4 (Ranked 6/108)

RESEARCH EXPERIENCES

Systems Energy Efficiency Lab (SEELab), University of California San Diego

- **Research fields: Computer Architecture** Feb 2025 – Present
- Focus: SW/HW Co-design, Processing In Memory, In Storage Processing, Graph Analytics, Hyperdimensional Computing, Database

Flexible and Printed Electronics Lab, University of California San Diego

- **Project:** (1) Memristor fabrication & (2) Multimodal sensing glove Sep 2024 – Jan 2025
- Focus: MEMS & NEMS fabrication, Biomedical signal processing

Micro-Electro-Mechanical System Laboratory, Tsinghua University

- **Project:** Wearable acetone gas sensor for breath detection and analysis Oct 2021 – Jun 2024
- Focus: Wearable sensors, Semi-conductor gas sensor, Microfabrication techniques
- **Project:** Laser-Induced Graphene Flexible Strain Sensor Sep 2022 – Nov 2023
- Focus: High-D Graphene, Flexible strain sensor, Microfabrication techniques

Computational Medicine Laboratory, Western Ontario University

- **Project:** CT Perfusion heterogeneity analysis using PM3 and ML Jan 2020 – Aug 2020
- Focus: Fractal dimension analysis, Machine learning, Reconstruct 3D perfusion maps

PUBLICATIONS

CONFERENCES

[1] Quanling Zhao*, **Yanru Chen***, Runyang Tian, Weihong Xu, and Tajana Rosing†, ”HDDB: Efficient In-Storage SQL Database Search Using Hyperdimensional Computing on Ferroelectric NAND Flash,” *The Chips To Systems Conference (DAC)*, 2026.

[2] **Yanru Chen***, Zheyu Li*, Keming Fan, Runyang Tian, John Hsu, Minxuan Zhou, and Tajana Rosing†, ”RAPID-Graph: Recursive All-Pairs Shortest Paths Using Processing-in-Memory for Dynamic Programming on Graph,” *Design, Automation and Test in Europe Conference (DATE)*, 2026. (Accepted)

[3] **Yanru Chen***, Runyang Tian*, Yue Pan, Zheyu Li, Weuhong Xu, and Tajana Rosing†, ”CHIME: Chiplet-based Heterogeneous Near-Memory Acceleration for Edge Multimodal LLM Inference,” *Design, Automation and Test in Europe Conference (DATE)*, 2026. (Accepted)

[4] **Yanru Chen**, Jiaqi Liu, Yixin Liu, and Min Zhang†, ”Enhanced Strain Resistance of Fractal Fiber Laser-Induced Graphene for Flexible Electrodes Via Annealing and Plasma Etching,” in *23rd International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers)*, 2025, pp. 1109-1112. (Poster, presented by Y. Chen)

[5] Yixin Liu*, **Yanru Chen***, Zhibiao Wang, and Min Zhang†, ”Enhanced Electrical Conductivity in Laser-Induced Graphene-Silicon Carbide Laminated Nanosheets for Flexible Strain Sensors and Pulse Wave Velocity Assessment,” in *IEEE 37th International Conference on Micro Electro Mechanical Systems (MEMS)*, Austin, TX, USA, pp. 919-922, 2024. (Poster, presented by Y. Chen)

[6] **Yanru Chen**, Sanjay R. Kharche†, Yan Min Zhang, G.H. Janssen, and Christopher W. McIntyre†, "Quantifying microvascular alterations due to a pharmacological agent," in *42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Montreal, QC, Canada, 2020. (Oral, presented by Y. Chen)

[7] Sanjay R. Kharche†, **Yanru Chen**, and Christopher W. McIntyre†, "Fractal Dimension Based Texture Analysis of CT Perfusion Imaging," in *42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Montreal, QC, Canada, 2020. (Oral, presented by Y. Chen)

JOURNALS

[1] **Yanru Chen**, Runyang Tian, Zheyu Li, Mahbod Afarin, Weihong Xu†, and Tajana Rosing, "GEN-Graph: Heterogeneous PIM Accelerator for General Computational Patterns in Graph-based Dynamic Programming," submitted to *Technology Computer Aided Design (TCAD)*.

[2] **Yanru Chen**, "Low-Cost Spin-Coating Process for SnO2-Based Memristors: Comparative Study of Different Solvent Systems and Device Performance," *Available at SSRN 5208743*, 2025. (Preprint)

[3] **Yanru Chen**, Yixin Liu, Jiaqi Liu, Yuzhen Li, Yuhan Liu, Wenjie Zhang, Liuyang Han, Dongkai Wang, Shuhong Cao, Hanxiao Liu, and Min Zhang†, "Porous PDMS–ZnO Wearable Gas Sensor for Acetone Biomarker Detection and Breath Analysis," *ACS Applied Materials & Interfaces*, 2024.

[4] Jiaqi Liu, Yuan Yu, Rujun Zhang, **Yanru Chen**, Yanlong Guo, Yi Zhang, Ran Tao, Jing-Ting Luo, Hairong Zheng, Pingfa Feng†, and Min Zhang†, "Trapping nanoscale particles via quasi-Scholte mode in acoustofluidics," *Lab on a Chip*, 2025.

[5] Yuhan Liu, Liuyang Han, Siqi Lv, Tao Jiang, Mingkai Duan, Hanyu Guo, Yuzhen Li, Qisen Xie, **Yanru Chen**, Dongkai Wang, and Min Zhang†, "Emotional and Directional Enabled Programmable Flexible Haptic Interface for Enhanced Cognition in Disabled Community," *Research*, 2025.

[6] Qisen Xie, Liuyang Han, Jie Liu, Wenjie Zhang, Liuyan Zhao, Yuhan Liu, **Yanru Chen**, Yuzhen Li, Qian Zhou, Ying Dong, and Min Zhang†, "Kirigami-Inspired Stretchable Piezoelectret Sensor for Analysis and Assessment of Parkinson's Tremor," *Advanced Healthcare Materials*, 2025.

[7] Yuzhen Li, Yunfei Wang, Yixin Liu, Yuhan Liu, Liuyang Han, **Yanru Chen**, Juntian Qu, Puxiang Lai, and Xiang Qian†, "Simultaneously encapsulation and formation of PDMS-MWCNTs composites for multi-directional microchannel force sensors," *IEEE Sensors Journal*, 2024.

AWARDS & SCHOLARSHIPS

- Workshop on Learning and Information Theory, 2nd Best Oral Presentation Award — Nov 2024
- Jacobs Fellowship, University of California San Diego — Aug 2024
- Outstanding Undergraduate Graduation Project Award, Jilin University — Jun 2021
- Excellent Student of the College (Top 5%), Jilin University — 2018 – 2021
- MITACS Globalink Research Internship Award, Western University — Feb 2020

PROFESSIONAL EXPERIENCES

Shenzhen Hanit Industrial Technologies Co., Shenzhen, Guangdong, China — Jun 2023 – Oct 2023
Assistant Engineer, Department of Hardware

- Developed a flexible strain sensor project by synthesizing a novel LIG-SIC nanosheet with self-temperature compensation.

Vivolight Medical Device & Technology Co., Shenzhen, Guangdong, China — Apr 2021 – May 2021
Algorithm Intern, Department of Algorithm

- Developed an advanced OCT imaging system by integrating Near-Infrared Spectroscopy (NIRS) with a machine learning-based lipid imaging system.

OTHER SKILLS

- Programming Languages: Python, C++, MATLAB, Verilog
- EDA & Simulation Tools: Altium Designer, Cadence Virtuoso, COMSOL, AutoCAD
- Platforms & Microcontrollers: Arduino, ESP32, FPGA (Xilinx/Altera)