Jianyu Wang

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Education

Beijing Institute of Technology (BIT), Beijing, China — 2021 – Present

B.S. in Microelectronic Science and Engineering **(MSE)**, expected Jun. 2025

GPA: 87.4 / 3.6 | **Rank:** 20% | **CET-4:** 560

Experience

C3I, Tsinghua University — Nov. 2023 – Present

Research Intern Manager: Ph.D. Kaiyan Zhang, under the guidance of Prof. Bowen Zhou

Research on End-Cloud Language Model Communication and Uncertainty Metric. Reproduction of the "Skeleton of Thought" Paper, Responsible for the 1.8B/3B/7B Models (StableLM/Qwen/TinyLlama, etc.), **SFT**, Partial Demo Implementation and Testing, Scheme Discussion. Currently utilizing the **FastChat framework** for testing and **fine-tuning with LORA**.

I am currently conducting research on logits-level Uncertainty Metric and collaboration between large and small models.

- Uncertainty Mertic
- Edge-Cloud Collabration
- Supervisied Fune-Tuning for Language Model
- **Publicaitons**:
  1. Zhang, K., **Wang, J.**, Hua, E., Qi, B., Ding, N., & Zhou, B. (2024). CoGenesis: A Framework Collaborating Large and Small Language Models for Secure Context-Aware Instruction Following. arXiv preprint arXiv:2403.03129. (Submission to **ACL 2024**)

i²MEMS Lab, Beijing Institute of Technology — Aug. 2023 – Present

Research Intern Individual Projects, under the guidance of Assoc.Prof. Xiaoyi Wang

Design and Manufacture of **Flexible Calorimetric Flow Sensors**. I conducted work in sensor design, simulation, photolithography, etching, PCB design, testing, and other related tasks.

For sensor design, I utilized **Ansys Fluent** for thermal-fluid-structure coupling simulation. I employed **Ansys parametric capabilities** to **optimize** parameters maximizing sensor sensitivity between the heater and detector platinum resistors.

In the chip manufacturing process, I performed spin coating with AZ40XT photoresist, followed by **UV exposure**, **RIE** (Reactive Ion Etching), and **O-Plasma** processes to create micro-suspension structures. Subsequently, I used the **lift-off fabrication** to transfer the pattern from the mask plate to the platinum resistors for fabricating the heater and detector components.

Finally, I utilized a laser marking machine to etch **Krigami patterns** onto PDMS.

I am currently building a thermal model for sensor heat transfer, designing PCB circuits, and testing devices.

- Kirigami Pattern Design
- Micro-Suspension Design and Simulation
- Experience in RIE, O-Plasma, UV Exposure, etc.

Dream Chaser Robotics Team, Beijing Institute of Technology — Nov. 2021 – Jan. 2023

Team Member Group Projects

The Dream Chaser robotics team aims to win in Robomaster. I was responsible for the neural network design, training, and deployment for the radar robot, and conducted project debugging based on operational performance. During this process, I acquired proficiency in PyTorch and implemented several object detection networks.

- Coordinate System Transformation, 3D Point Cloud Registration, and Target Recognition

- Training and Deployment of Object Detection Networks (e.g., Poly-YOLOv5)
- Awarded **Third Prize** in the 2022 RoboMaster

Low Emission Vehicle Research Lab, Beijing Institute of Technology Mar. 2022 – Present

Project Manager Individual Projects, under the guidance of Prof. Youtong Zhang

This is a project that I **initiated from scratch**, leading a team of over a dozen members to develop an **efficient fruit picking robot**. As the principal investigator of the project, I focused on addressing the challenge of **recognizing small target fruits**. Through optimizations at both the model and deployment levels, I achieved significant improvements in performance and practical effectiveness.

I am currently conducting research on small-sample semantic segmentation, focusing on self-supervised methods and few-shot learning approaches.

- **Model Optimization:** Enhanced the **Shufflenetv2** network for multiscale feature fusion, incorporating lightweight ShuffleBlock components and a self-developed asymmetric **depthwise separable convolution** structure.
- **Deployment Optimization:** Replaced the network activation function from non-linear to linear, and utilized the rknn-toolkit to convert the ONNX model to an RKNN model. Implemented model acceleration on RK3588s for edge-side deployment.
- **Outcomes:** Achieved 2 **national invention patents** (as the first inventor) and received numerous **national-level competition awards** in the field of robotics.

Skills

- **Programming Languages:** Python, C/C++, Matlab
- **Skills:** Neural Network Development, Circuit Design, CFD and Simple Mechanical Design
- **Tools Available for Use:** Pytorch, Ansys Fluent, SolidWorks, AutoCAD, Altium Designer, Cadence

Honors and Awards

University-Level Second-Class and Third-Class Academic Scholarships 2021 – Present
Outstanding Student Award at Beijing Institute of Technology Oct. 2023
"Research and Innovation Role Model" in the 2022 Ruixin Star Awards at Ruixin College, Beijing Institute of Technology Oct. 2022
First Prize in the 25th China Robot and Artificial Intelligence Competition June. 2023
Second Prize in the National Robotics Science and Technology Innovation Exchange Camp for College Students in 2023 Dec. 2023
Third Prize in the 2022 ROBOMASTER Aug. 2022
First Prize in the 2022 Higher Education Cup Mathematical Modeling Competition in Beijing Oct. 2022
Second Prize in the National University Integrated Circuit Innovation and Entrepreneurship Competition in Beijing Aug. 2023

Miscellaneous

- HomePage: https://jianyu03.github.io
- GitHub: https://github.com/jianyu03
- Communist Party of China (CPC) Member Dec. 2022 – Present
- Minister of the Student Union at the School of Information and Electronics Oct. 2022 – Oct. 2023
- Discipline Inspection Commissioner of the Sixth Party Branch at Ruixin College Jan. 2024 – Present