

Jianping Li

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EDUCATION

- **University of Pennsylvania** Philadelphia, PA
Master of Science in Engineering in Robotics (Artificial Intelligence Track) Class of 2024
 - **ShanghaiTech University** Shanghai, China
Bachelor of Engineering in Computer Science and Technology Sept. 2018 - July 2022
- Relevant Courses:** Operating System, Computer Architecture, Machine Perception, Algorithm Design

TECHNICAL SKILLS

Languages: C/C++, Python

System: Linux, Git, OpenMP

AI: PyTorch, CUDA, OpenCV

Tools: Vim, Docker, Kubernetes

SELECTED PROJECTS

- **Efficient Convolutional Module for Semantic Understanding:**
 - Design a new computational operator for **general** semantic understanding tasks like semantic segmentation and visual grounding. As a useful plugin, it can be easily inserted into layers.
 - Implement modules with **CUDA** to accelerate parallel computing speed. Use region-based sampling methods to derive directional feature and decrease computational complexity significantly. Performance of mIOU increases by 3% with **linear** time-space complexity.
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- **Cryptocurrency Mining Hash Function Optimization:**
 - Optimize computing process for SHA256 calculation in **C**, which is a cryptographic hash function from current block to the previous block in blockchain.
 - Techniques in optimization: **Multithreading** based on openMP and pthread, **Loop unrolling** in combination with **SIMD** instructions, **Cache Blocking**.
- **Multi-modal Named Entity Recognition:**
 - Align images with text by captioning as **multi-modal** inputs for a **transformer-based** model implemented in **PyTorch**, which leads to a significant improvement.
 - KL divergence is adopted to make predicted label distributions similar among different input views. Model is strengthened by cooperative learning which can be useful across industries since images may be unavailable.
- **Pintos: An Operating System Supported by Stanford University:**
 - Implement a thread system which supports Alarm Clock, Priority Scheduling. Enable programs to interact with the OS via system calls.
 - Design a virtual memory system which supports Stack Growth and Memory Mapped Files. Design a file system which enables Indexed and Extensible Files.

EXPERIENCE

SVIP Lab, ShanghaiTech University

Jan. 2021 - May 2022

Advisor: **Shenghua Gao**, Associate Professor

- Do research on computer vision and natural language processing.
- Teaching assistant for CS172: Computer Vision in ShanghaiTech University