Kunjun Li

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EDUCATION

National University of Singapore Aug 2022-Present
Bachelor of Engineering in Computer Engineering (Honours)
Cumulative GPA: 4.75 / 5.0
Incoming Exchange at University of Washington, Seattle, 24-25 Spring

PUBLICATION

TinyFusion: Diffusion Transformers Learned Shallow
Gongfan Fang*, **Kunjun Li***, Xinyin Ma, Xinchao Wang
In Submission

Demo Abstract: PixelGen: Rethinking Embedded Camera Systems for Mixed-Reality
Kunjun Li, Manoj Gulati, Dhairya Shah, Steven Waskito, Shantanu Chakrabarty, Ambuj Varshney
Proceedings of the 2024 ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN '24). **Best Demo Runner Up**.

PROFESSIONAL EXPERIENCE

NUS Learning and Vision Lab Singapore
Undergraduate Research Assistant 07/2024 – present
Supervisor: Prof. Wang Xinchao
• Developed TinyFusion, a novel learnable depth pruning framework for Diffusion Transformers, achieving a $2\times$ speedup with an FID score of 2.86, using less than 7% of the original pre-training cost.
• Generalized TinyFusion to various architectures, including Diffusion, Flow-based, and Autoregressive models, achieving significant computational efficiency while maintaining strong performance.
• Conducted extensive experiments and analysis, contributing to the understanding of post-pruning recoverability and optimization in large-scale Diffusion Transformer models.
• Paper is currently under review at a top-tier computer vision conference.

NUS-NCS Joint Laboratory for Cyber Security Singapore
Undergraduate Research Assistant 07/2023 – 07/2024
Supervisor: Prof. Ambuj Varshney
• Proposed PixelGen, an innovative Embedded Camera System integrating Language Models and Diffusion Models, to generate High-Resolution RGB Images from monochrome images and sensor data.
• Paper Won Best Demo Runner Up at ACM/IEEE IPSN 2024 Conference.

PROJECT EXPERIENCE

Parallel Virus Scanning with CUDA NUS
• Developed a CUDA-based parallel program to detect viral DNA in human samples, achieving significant performance gains on NVIDIA A100 and H100 GPUs.
• Optimized DNA sequence matching with asynchronous kernel launches and memory transfers, ensuring scalability and efficiency under strict resource constraints.

High-Performance RISC-V Processor Design NUS
• Designed a pipelined RISC-V CPU in Verilog and integrated the Karatsuba Algorithm to optimize matrix multiplication, achieving significant performance improvements.
• Implemented dynamic branch prediction with a Branch History Table and developed hazard detection and forwarding mechanisms to ensure seamless pipeline execution.