Yupeng Han

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Education

Purdue University, West Lafayette (2017–2018) GPA: 3.96 — M.S. in Engineering
Shanghai Jiao Tong University (2013–2017) GPA: 3.75 — **Tsien-Hsue-Shen Honor Program** B.S. in Engineering

Professional Experience

PlusAI Inc. — **Staff Software Engineer**
Compute-Efficient Algorithm Development & GPU Kernel Optimization — Jan 2024 - Present
- Optimized secondary perception stack with a focus on compute efficiency in edge compute environments.
- Delivered L4 perception features, including traffic light association and safety logic for edge cases, with considering compute efficiency and runtime latency constraints.
- Investigated detection inconsistencies and performed cross-module debugging to resolve system-level issues.

EBots Inc. — **Senior GPU Engineer**
High-Performance CUDA Kernel Design & GPU Compute Optimization — May 2022 - Jan 2024
- Developed Dense Bin Picking solutions.**[Video]**
- Spearheaded GPU-based dense object retrieval, reducing processing latency from minutes to 50ms by designing highly parallelized CUDA kernels and optimizing memory access patterns.
- Achieved **20x** speedup for a large-scale 3D reconstruction module from 170ms to 8ms by re-architecting compute kernels using spatial locality-aware algorithms and cache-friendly data structures.
- Conducted detailed profiling and optimization of kernel performance using Nsight System and Nsight Compute.
- Implemented a GPU-resident KD-Tree structure enabling a **10x** speedup for iterative nearest neighbor searches, reducing ICP registration latency from 150ms to 15ms.

Trifo Inc. — **R&D Engineer**
Optimize SLAM & Local Feature Generation — Jun 2021 - May 2022
- Developed a robustness-driven feature voting strategy to prevent noisy local scans from corrupting the global map, enhancing stability and accuracy.

CMU Robotics Institute — **Research Engineer**
Real-Time GPU Kernel Development — Oct 2019 - Jun 2021
- Built real-time GPU object detection pipelines with optimized compute efficiency.
- Developed the pose proposal generation module for an RGB-D 6-DOF pose estimation framework, achieving state-of-the-art performance on the YCB-Video dataset. Engineered fast pose-proposal generation leveraging CUDA for efficient matrix and tensor computations.

Deptrum Co. Ltd — **Computer Vision Engineer**
Face Detection on Depth Images — Apr 2019 - Aug 2019
- Developed a high-precision face detection pipeline on depth images, optimizing CPU-side inference throughput.

Publications

- A Agrawal, **Y Han** and M Likhachev, "PERCH 2.0: Fast and Accurate GPU-based Perception via Search for Object Pose Estimation" *IEEE International Conference on Intelligent Robots and Systems (IROS), 2021*
- J Thekinen, **Y Han** and J Panchal, "Designing Market Thickness and Optimal Frequency of Multi-Period Stable Matching in CBDM" *ASME International Design Engineering Technical Conferences (IDETC), 2018*

Honors

Dean's List and Semester Honors — All Semesters in Purdue
Selected as Outstanding Individual [**Featured** on SJTU Academic News Website] — Jun 2016
First Prize, National Mathematical Olympiad — Jan 2013

Skills

Programming: C++, CUDA, Python
Technical: CUDA Kernel Optimization, GPU Profiling (Nsight Systems/Compute), Parallel Programming