Yupeng Han

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📚 Education & Research

Purdue University, West Lafayette	Aug 2017 - Dec 2018
M.S. in Engineering	GPA: 3.96/4.00
Shanghai Jiao Tong University, China	Aug 2013 - Jun 2017
Bachelor in Mechanical Engineering, **Tsien-Hsue-Shen Honor Program**	GPA: 3.75/4.30

💼 Professional Experience

PlusAI Inc.	**Staff Software Engineer**
Object Tracking & Sensor Fusion	Jan 2024 - Present
EBots Inc.	**Senior Computer Vision Engineer**
6Dof Pose Estimation & 3D Reconstruct & CUDA Optimization	May 2022 - Jan 2024

- Dense Bin Pick [**Video**]
- Spearheaded innovative efforts in GPU-based Dense Bin Picking, facilitating the precise retrieval of tiny, flexible sub-millimeter objects such as RF cables for mobile phones. By optimizing algorithms and transitioning sequential processes to GPU-based algorithms, I expedited the research paper's operations from minutes to 50ms.
- 3D Reconstruction
- Speed up point cloud generation module by **20X**, using local plane fitting and hash checking, significantly speeding up denoising and triangulation steps, reducing point cloud generation time from 170ms to ∼8ms. The final 3D point cloud has a three-dimensional resolution of 40 microns and can reconstruct the gold metal surface.
- Point Cloud Registration
- Implement KD-Tree structure in GPU to accomplish **10X** speed-up for the ICP module from 150ms to 15ms.

Trifo Inc.	Research & Development Engineer
Optimize SLAM & Local Feature Generation	Jun 2021 - May 2022

- Created submap feature voting algorithm to correct errors caused by odometer travel and depth sensor noise.

CMU Robotics Institute	**Research Engineer - Robotic Perception**
GPU-based Real-Time Object Pose Estimation System	Oct 2019 - Jun 2021

- Vehicle Detection Based-on Sensor Fusion[**Video**]
- Created an efficient 3D vehicle detection system for autonomous driving by leveraging deep learning, computer graphics, and optimization techniques to achieve high speed, scalability, and accuracy.
- Indoor Object-6DOF Pose Estimation[**Video**]
- Developed the pose proposal generation module in an RGB-D 6-DOF pose estimation framework. Tested on the open dataset (YCB-Video), results show that our algorithm surpasses state-of-the-art 6-DOF pose estimation methods with great margins without the need for any ground truth pose annotations.

Deptrum Co.Ltd	Computer Vision Engineer
Face Detection on Depth Images [**Video**]	Apr 2019 - Aug 2019

- Developed depth image face detection pipeline. Obtained 99.93% precision and over 97% recall.

📙 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
Outstanding Individual of SJTU [**Pressed** by SJTU Academic News Website]	Jun 2016
The **First Prize** of The National Mathematical Olympiad	Jan 2013

🛠 Skills

Programming: C++, CUDA, NVIDIA Nsight, Python, ROS, RTOS
Technical: RGB-D 6DOF Pose Estimation, 3D Reconstruction, Parallel Programming, SLAM, System Performance Analysis