YUPENG HAN

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EDUCATION & RESEARCH

Carnegie Mellon University, Robotics Institute — Oct 2019 - June 2021
Topic : GPU-based Real-Time Object Pose Estimation System — Advisor: **Prof. Maxim Likhachev**

Purdue University, West Lafayette — Aug 2017 - Dec 2018
M.S. in Engineering — GPA: 3.96/4.00

Shanghai Jiao Tong University (SJTU), China — Aug 2013 - Jun 2017
Bachelor in Mechanical Engineering, ***Tsien-Hsue-Shen Honor Program*** — GPA: 3.75/4.30

PROFESSIONAL EXPERIENCE

Computer Vision Engineer — EBots Inc.
Inference Speed-Up & GPU Programming — *May 2022 - Present*

- Optimize the perception system from algorithmic and engineering perspective.
- Accomplish 10X speed-up for the ICP module. Applied KD-Tree to optimize the point nearest point pairing process, learn the statistic within the point cloud, eliminate outliers within the point pairing process, and other engineering perspective optimization.
- Speed up the assembly part detection module by factor of 5X. Locate time-consuming bottle necks, apply OpenCV-GPU API to speed up preprocessing and postprocessing, and warm up the tensor-rt module while initiating the module.

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

- Developed a submap feature voting mechanism to adjust submap poses before merging into the global map to compensate for errors accumulated in odometer travel and errors generated by the depth sensor.

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

- Vehicle Detection Based-on Sensor Fusion[**Video**]
- Developed a fast, scalable, and accurate 3D vehicle detection framework for autonomous driving that combines the strengths of deep learning, computer graphics, and optimization.
- 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.

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

- Developed a face detection running on depth images. Obtained 99.93% precision and over 97% recall.

HONORS & ACHIEVEMENTS

- 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 National College Students Science and Technology Contest — Aug 2014
- The First Prize of The National Mathematical Olympiad — Jan 2013

PUBLICATIONS

- **Y Han**, S Aine, M Likhachev, "Real-time 3D Perception via Search for Vehicle Detection with No Pose Annotated Training Data"
- 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*

TECHNICAL STRENGTHS

Programming C++, CUDA, Python, ROS, RTOS, MATLAB
Technical Inference Speed-Up, RGB-D Pose Estimation, SLAM, Parallel Programming