Jing–An Tzeng

734-882-5333 | robintzg@umich.edu | https://robintzeng.github.io/

SUMMARY

MS student in Electrical and Computer Engineering. 2020 summer interned at ASML with experience in computer vision, machine learning, image processing and SLAM. Strong software skills in C++ and Python.

EDUCATION

University of Michigan **Ann Arbor, MI**

Master of Science in Electrical and Computer Engineering (Robotics track), ***GPA:*** *4.0/4.0* Apr 2021

- Coursework: Self-Driving Cars: Perception and Control, Computational Data Science and Machine Learning, Mobile Robotics, Foundations of Computer Vision, Advanced Computer Vision

National Tsing Hua University (NTHU) **Hsinchu, Taiwan**

Bachelor of Science in Power Mechanical Engineering, ***GPA:*** *3.92/4.3,* ***Rank***: *5/97* Jun 2018

- Coursework: Data Structures and Algorithms, Linear Algebra

PROFESSIONAL EXPERIENCE

ASML **San Diego, CA**

Droplet Generation Control and Automation System Intern, Control Team May 2020 – Aug 2020

- Designed an object detection pipeline from scratch by OpenCV, Tkinter and Scikit-learn in Python to detect the tin droplets and satellites for preprocessing, labeling, feature extraction and classification.
- Detected the interest objects with maximally stable extremal regions (MSER) and eliminated the overlapped bounding boxes with Non-Maximum Suppression (NMS).
- Evaluated the classifiers' performance with k-fold cross validation, learning curve and validation curve.

PROJECT EXPERIENCE

Advanced Computer Vision – Improvements on Object Detection (Faster R-CNN) **Ann Arbor, MI**

Software Team Leader Sep 2020 – Dec 2020

- Trained and evaluated the Faster R-CNN on PASCAL VOC 2007 with PyTorch.
- Introduced efficient channel attention and cross stage network to ResNet-50 backbone and increased 5 mAP.
- Decoupled the classification head and localization head and improved the mAP by 1.

Individual Study – Benchmark for Video Inpainting **Ann Arbor, MI**

Team Member Sep 2020 – Dec 2020

- Designed algorithms to classify the degree of attributes — camera motion, foreground motion and displacement — which affect the video inpainting model performance on DAVIS dataset.
- Evaluated the performance of the algorithm by Precision – Recall curve and ROC curve.

Mobile Robotics – Visual Inertia Navigation **Ann Arbor, MI**

Team Leader Mar 2020 – Apr 2020

- Improved a Muti-State Constraint Kalman filter-based visual inertial navigation framework (Openvins) with learning- based interest point extractor – SuperPoint in Pytorch by using C++.
- Evaluated the performance on the EuRoC MAV dataset with ROS and ameliorated the performance for every tasks.

Computer Vision – Depth Completion **Ann Arbor, MI**

Team Member Mar 2020 – Apr 2020

- Completed dense depth data from a color image and sparse LiDAR data in KITTI depth completion benchmark.
- Developed two-pathway learning architecture with U-Net like low-resolution feature extractor and utilized attention mechanism to propose the final prediction in Pytorch.

Eurobot 2018 Contest – Autonomous Robot **Taiwan/France**

Software Team Leader Sep 2017 – Jun 2018

- Prototyped positioning system model with MATLAB for integration test, utilized microcontrollers and ultra-wideband (UWB) chips to locate the robots accurately and practiced the whole system with C++ in Linux.
- Implemented Kalman filter and trilateration algorithm to enhance measuring accuracy and stability, increasing 30% accuracy which is within 5 cm radius with high repeatability.

TECHNICAL SKILLS

Programming Languages: C++, Python, MATLAB, Simulink

Platforms/Toolkit/Frameworks: Linux (Ubuntu), Git, ROS, Arduino, PyTorch, OpenCV, Scikit-learn