



## Po-Sheng 'Andy' Ser

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### Education:

**M.S** in Institute of Electrical Control Engineering,  
National Chiao Tung University (NCTU), Taiwan. 09/2018~present  
**B.S.** in Electrical and Computer Engineering (ECE),  
National Chiao Tung University (NCTU), Taiwan. 09/2015~06/2019

### Research knowledge/experiences:

Robotic Vision, Image Recognition and Processing, Automatic Control System, Machine Learning, Simultaneous Localization and Mapping.

### Related Courses:

Automatic Control Systems, Probability, Signals and Systems, Digital Signal Processing, Sensing Intelligent System, Image processing, Robotics, Machine Learning

### Recent Projects and Professional Experiences:

#### **Darpa Subterranean Challenge (2018/12~)**

The purpose of Subt Challenge is using UGV and UAV to do navigating, mapping and searching for the specific artifacts under the environment of underground, which is lightless and hard to construct a fixed network system. In the team, I am responsible for **Artifacts Searching** and **Simultaneous Localization and Mapping (SLAM)**.

#### **Mini Competition for Mobile Manipulation (2018/09~2019/1)**

This competition is a final project of **Sensing and Intelligent System** course. The purpose is to simulate the robot in manufactory, which can recognize the objects and do pick-n-place automatically. The tasks of the mobile manipulator include: object segmentation, pose estimation, navigation, and pick-n-place. I performed as a teaching assistant during the course for a semester and I am responsible of **object segmentation** using a Fully Convolutional Network (FCN), **pose estimation** task using Point Cloud Library(PCL) and **pick-n-place** task using Moveit.

### **Pick and place system (2018/10~)**

Our research goal is to design a system which can autonomously pick the object and place it on the shelf with brand name facing forward using UR3 and UR5. To reach our goal, we perform brandname-based fully convolutional network (FCN) that can predict affordance and grasp to achieve pose-aware placing. In the team, I am responsible for **Deep Learning** and **Image Processing** work.

### **RobotX- Navigation and Obstacle Avoidance (2017/9 ~ 2018/6)**

My research is based on the task of RobotX, which is the biggest competition of marine robot around the world. In order to construct a well performing marine robot, I have worked on **Motor Control** and **Image Recognition**.

### **Teaching Assistant in Duckietown(2017/9~2018/2)**

I performed as a teaching assistant during the course for a semester. From this experience, I learn a lot of skills such as **ROS (Robot Operating System)**, **Python**, **OpenCV**, **Arduino**.

### **Professional Skills:**

**Programming Language:** Python, JAVA, C/C++ , Matlab

**Machine learning frame work:** Pytorch, Caffe, Tensorflow

**Middleware and Libraries:** Robotic Operating System (ROS), PCL (Point Cloud Library), OpenCV, Moveit.

**Sensors and Hardware:** Depth Camera, Lidar, UR3 & UR5, Arduino sensor kit, Raspberry Pi, Nvidia TX2.

### **Teaching Experience:**

**Teaching Assistant**, Sensing and Intelligent System (Fall 2018)

**Teaching Assistant**, Creative Software Project (Fall 2017)

### **Recent Publications:**

[1] Y.-S. Su, S.-H. Lu, **P.-S. Ser**, W.-T. Hsu, W.-C. Lai, B. Xie, H.-M. Huang, T.-Y. Lee, H.-W. Chen, L.-F. Yu, H.-C. Wang, "Pose-aware Placing with Semantic Labels - Brandname-based Affordance Prediction and Cooperative Dual-Arm Active Manipulation," Accepted by IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2019)