Week Report #01

Week 1 (04.08 - 04.12)

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Overview

- Preliminary Workstation Setup
- Preliminary Studies
- Project Idea Brainstorming
  - Preliminary Surface Search

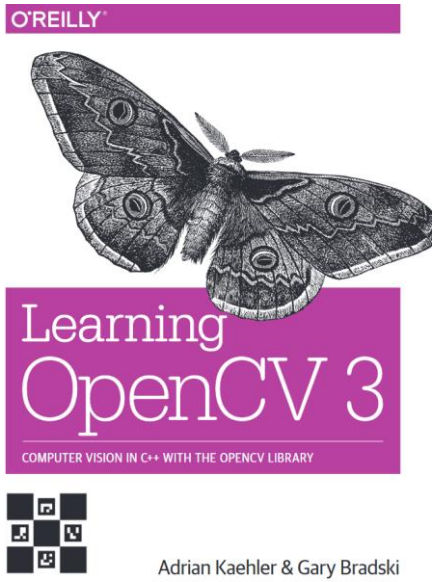
Preliminary Workstation Setup

- Created GitHub Repository (https://github.com/NXXR/HCU-project)
  - Created Project Board to track tasks and progress (https://github.com/NXXR/HCU-project/projects/2)
- Created Toggle Account and Project for time tracking & management
- Installed JetBrains Toolbox & Pycharm Professional in preparation for programming tasks

Preliminary Studies

- Read through ROS Getting Started (http://wiki.ros.org/ROS/StartGuide)

- Read first few Chapters of “Learning OpenCV 3” by Kaehler & Bradski (O’Reilly)



Project Ideas

- Setting PoI (Point of Interest) for Drone by Gesture
  - *i.e. pointing at an object to have the drone move to, hover above or orbit the object.*

  - Preliminary Surface Search:
    - Gesture Controlled Drones (http://bit.ly/mzhcu_GestureControlledDrones)

Project Ideas

- Robot Clearance Detection
  - *i.e. detect overhanging obstacles or tunnels, then detect height and calculate whether the mobile robot can fit underneath it.*

  - Preliminary Surface Search:
    - Overhanging Obstacle Detection (http://bit.ly/mzhcu_OverhangingObstacleDetection)
    - Obstacle Size Measurement (http://bit.ly/mzhcu_ObjectSizeMeasurement)
    - Distance and Area Measurement (http://bit.ly/mzhcu_DistanceAreaMeasuring)
    - Camera Based Size Measurement (http://bit.ly/mzhcu_ObstacleSizeMeasurement)

Project Ideas

- Floor Type Detection
  - *i.e. detect type of ground the robot might drive on, detect different surfaces (soft and hard); detect irregularities (dirt/stains) on uniform surfaces.*

  - Preliminary Surface Search:
    - Image-Based Floor Segmentation (http://bit.ly/mzhcu_ImageBasedFloorSegmentation)
    - Vision-Based Dirt Detection (http://bit.ly/mzhcu_VisionBasedDirtDetection)

Project Ideas

- Drone Mapping for mobile Robot Pathfinding
  - *i.e. use drone to map surfaces to help pathfinding and task planning of mobile robot; possibly together with Floor Type Detection to find stains or dirt and create tasks for robot task planning.*

  - Preliminary Surface Search:
    - UAV-Robot-Collaboration (http://bit.ly/mzhcu_UAV-Robot-Collaboration)
    - Drone Pathfinding for Mobile Robot (http://bit.ly/mzhcu_DronePathfinding)