EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

Mathematisch-Naturwissenschaftliche Fakultät
Fachbereich Informatik
Kognitive Systeme (Prof. A. Zell)

Masterarbeit

Obstacle mapping of quad-rocopter

Quadrocopters have developed rapidly during recent years. Flying autonomously in unknown environments without human intervention is still a challenging task. Vision-based solutions become more and more popular in applications of Quadrocopters. Autonomous flight requires to plan the flight path from a waypoint to another, and to avoid the collision with some obstacles standing on the planed path. An important task for autonomous flight is to recognize the obstacles and to map them.

The student may build up a Quadrocopter like the one used in our “Flying Robots Praktikum” with necessary components, such as a Pixhawk flight controller, an onboard computer, cameras etc. He needs to program the onboard computer to realize the existing ORB-SLAM2 algorithm. Based on the depth image output of the camera, he needs to map the obstacles in the view of the Quadrocopter. The results should be sufficient for the next step: obstacle avoidance and path planning, done by the supervisor.

Requirements:

- Knowledge in computer vision and control theory
- Skillful in C++ programming in Linux
- Skillful in ROS
- Participation in Flying Robots Praktikum
- English speaking

Kontakt

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