

3D Model Generation of Large Objects Using Autonomous Quadcopters

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1. Introduction
 - (a) Motivation
 - (b) Description of Problem
 - (c) Current Methods for Acquiring Models
 - (d) Proposed Solution
2. Related Work
 - (a) Irschara et al.
 - (b) Engel et al.
3. System Design
 - (a) Hardware
 - (b) Architecture
 - i. Robot Operating System
 - ii. ARdrone Autonomy Package
 - iii. Localization
 - iv. Controller
 - v. Agisoft PhotoScan
4. Localization
 - (a) Problem Description
 - (b) Potential Solutions
 - (c) Particle Filter
 - (d) Results
 - i. Using Visual Odometry
 - ii. Using Accelerometer
 - iii. Using Gyroscope
 - iv. Using Magnetometer
 - v. Using Visual Tags
 - vi. Combining Different Methods
5. Controller
 - (a) Problem Description
 - (b) Design
 - (c) Graphs of Quadcopter Completing Different Paths in Varying Conditions
6. Model Generation
 - (a) Examples of models created by PhotoScan
 - (b) Accuracy of model generation
7. Conclusion