

1 Data Products and Other Materials Produced by the Project

While conducting this project, we expect, through our experimentation, to produce a large amount of data, including sensor measurements from the UAVs. We expect that the data will be produced at many levels within the project. They include raw sensor data and their ground-truth. For example, raw sensor data includes measurements directly from on-board sensors, such as lidar, vision sensors, IMU, and GPS.

2 Data Standards

Even though there is a standard format for images, a standard format for many other sensors such as lidars and IMUs, has not been established. The ASTM E57 standard for storage of data from 3D imaging systems in addition to ROS bag files will provide a vehicle for data dissemination. While the first version of the ASTM E57 standard is designed primarily for static sensor platforms, the next version of the standard is expected to include support for mobile platforms. Furthermore, the existing standard includes an extension mechanism that could be used to allow standard representation of the lidar data facilitate exchange and reuse of the data.

3 Data Sharing and Privacy Policies

Data will be shared electronically via our collaboration server. For data sets that are too large to efficiently transmit electronically, we will transmit the data physically using encrypted portable hard drives. After initial publishing using a data set, we will make the data set publicly available using our web server, or by request if the data set is too large for practical download via the Internet. If necessary, selected subsets of the data will be chosen to enable web-based access.

This project is not expected to generate any export-controlled results. We do not expect the data to contain any identifiable pedestrians, since the case studies will primarily involve areas not easily accessible to the public (such as non-accessible test sites such as bridges). In the event that people are inadvertently captured by our system, the identities of the people will be obfuscated if required.

4 Software Dissemination

Software dissemination is a key to maximize the broader impact. As such, we have shared many of our algorithms with the research community using open source release. The PI is committed to the free exchange of software and knowledge and have a history of publishing open source software. PI Scherer has release over 70 open-source packages (<http://bitbucket.org/castacks>). Team members of the AIR lab have also contributed to existing open source initiatives.

Our existing software code base for quad-rotor robots has been developed using the open source robot operating system (ROS) framework. We expect to continue to use ROS for the software development and advances in this project. Using ROS will simplify the dissemination of the algorithms (and data) to the general public in an easily accessible and reusable way.