

Debut for GPS-less UAV Lidar Surveying and Mapping System



Lidar technology, photogrammetry and other sensors continue to revolutionise the surveying and mapping industries, and the world is now buzzing about how UAVs and unmanned vehicles may hold the future of these industries. But only within the last few years has the sensor technology been sufficiently reduced in terms of size and weight to be considered for UAV platforms. It is now possible to capture point cloud data from a Lidar-equipped UAV and produce 3D environment results, processed without the need for GPS and other sensors.

Andy Trench of XactMaps is a groundbreaker for flying Lidar on a small UAV, and his company is actively producing results from the combined technology. Now, XactMaps is to collect point cloud data from a Lidar-equipped UAV and producing 3D environment results,

processed without the need for GPS and other sensors. Previously position sensors were used to track movement and aid in stitching real-time Lidar and other sensor data to create whole models of a given target or area. This important advancement is proving interior and exterior scanning can be accomplished using an intelligent software approach replacing heavy and expensive hardware.

XactMaps, a Rhode Island-based company, USA, is focused on creating the next generation of surveying and scanning tools for professional surveyors and commercial markets looking to increase efficiency with instant and accurate data. With a fleet of unmanned aircraft capable of autonomous flight XactMaps will carry Lidar technology and remote sensing to the next level. From the ground up to the tallest structures, scanning of fields, bridges, mountain sides, and entire buildings can be done in a fraction of the time and with very little manpower compared to traditional tools.

Multispectral, infrared and thermal sensors

Reducing cost and increasing efficiency are only the beginning of the benefits a versatile, nimble, and mobile scanning solution. Their custom-built aircraft can carry a wide array of sensors to obtain immediately useful data from nearly any location. Multispectral, infrared, and thermal sensors can easily be adapted to the platform, and within moments an aircraft can be on its way. These innovations mean data can be instantly obtained on-demand and with better results. Andy Trench is currently flying a Velodyne HDL-32E real-time capable 3D Lidar sensor and a Canon 5D camera on a folding octocopter platform. The Velodyne HDL-32E Lidar delivers 700,000 points of data per second with 40° vertical field of view and up to 20 full 360° rotations per second. It weighs only 1kg, making it a clear choice for UAV integration.

The team at XactMaps is dedicated to providing the best solutions with the newest technologies applied to the task at hand. They will consult on UAV integration, and ensure the equipment requested fills needs of the application. Many different options are available for a UAV system and these options are expanding rapidly. Full autonomy is achievable with onboard sensors giving the aircraft an unprecedented awareness of its surroundings. The options seem endless to what can be achieved as their aircraft become more capable, and sensing technology becomes more powerful, smarter, and smaller. The future looks bright for unmanned systems at the forefront of next-generation UAV and unmanned systems.

Flight

- [World First - XactMaps UAV Aerial LIDAR Scanning WITHOUT GPS aided data matching](#) from [Andy Trench](#) on [Vimeo](#).

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