Drones Equipped with LiDAR For 3D Mapping

Hilger, Alexander

A LiDAR laser measurement sensor and a survey grade GPS (dual units with yaw, pitch and roll gyroscope) were connected to an on board computer with mapping software and mounted on a drone to provide precise elevation data for making land contours, in the same way as done by manned aircraft. Drones are safer, dramatically less expensive, and the quality of data collected is far superior, because drones can fly much closer to the ground and in areas inaccessible to conventional aircraft. Light detection and ranging (LiDAR) measures the time it takes light to bounce off the earth and return to the sensor - at 300,000 light pulses per second, 250 elevations per square foot. The sensor can gather 250 million points in 15 minutes of autonomous flying and create topographical maps with high accuracy through software rendering. Drones equipped with LiDAR will revolutionize agriculture, archeology, construction, defense contracting, forestry, industrial inspections, land surveying, and mining. This is all possible through advancements in drone, GPS, and LiDAR technologies that have dramatically reduced the cost and expanded the applications.

Awards Won: