

Office of Technology Commercialization

Low-altitude Laser Altimeter System (LA²S)

Non-Confidential Description: Working in conjunction with existing autopilot technology, the Low-altitude Laser Altimeter System (LA²S) enables autonomous precision landings of uncrewed aerial vehicles (UAVs) in unknown environments. The small, robust LA²S provides real-time altitude and platform attitude (i.e., roll and pitch) relative to the local terrain for altitudes of 10 m or less and attitude angles of 30 degrees or less.

Compared to existing methods, the self-contained LA²S offers superior reliability and functionality in low-altitude operations of 10 m or less. A camera is positioned between two laser illuminators—all aligned so that the laser beams and the camera's image field of view lie in a common plane. The second laser illuminator prevents distortion of baseline alignment that can occur from unknown variations in platform attitude or an inclined terrain. The LA²S microcomputer analyzes data and uses the look-up table (LUT), which is populated with values determined experimentally during a calibration process. Since the LUT approach involves less real-time processing, it would result in faster times between data collection and height and angle readings.

Applications: UAVs can quickly and inexpensively collect detailed data during forest fires, floods, or other events that would be too dangerous for manned missions. UAVs are used in a growing number of research, defense and homeland security, and commercial ventures, all of which could benefit from LA²S. Additionally, the system would help manned aircraft when visual cues are obscured or unreliable.

Benefits: LA²S provides real-time altitude and platform attitude relative to the local terrain for altitudes of 10 m or less and attitude angles of 30 degrees or less that are critical to autonomous precision landings of UAVs in unknown environments.

License: None

Confidential Disclosure Agreement: KU is willing to enter into a Confidential Disclosure Agreement for the purpose of negotiating a License Agreement. If you are interested in learning details of this invention, please contact Keith Braman, Director of Technology Commercialization, at kbb Braman@ku.edu.

To see additional ITTC technologies available for licensing, go to www.ittc.ku.edu/techtransfer.

Updated: November, 2011