Abstract

The use of autonomous unmanned aerial vehicle (UAV) has been on the rise. They are used to replace an ever-increasing amount of labor. There is a need for unmanned aerial systems to operate safely in the environment around them. The work in this paper aims at creating an obstacle avoidance system using Stereo Vision. The work uses standard block matching algorithms. OpenCV and the KTTI Vision Benchmark suite is used. The ArduPilot SITL simulator is used for running the algorithms and displaying the results. The droneapi is an application that is used to access the UAV's information and describe new kinds of flight behavior. The application created is known as STOBA (Stereo Based Obstacle Avoidance), which was created to run within the ArduPilot SITL, in order to provide the mentioned obstacle avoidance capability

References

https://github.com/rmackay9/ardupilot-balloon-finder


   http://centmesh.csc.ncsu.edu/trac/MeshBed/wiki/HardWare/Drones/Autopilot


   Presentation of Real Time Obstacle Avoidance Algorithms Using Solely Stereo Vision.",
   IARP/EURON International Workshop on Robotics for risky intervention and Environmental

   for Obstacle avoidance using a Stereoscopic Camera", Thrid Panhellenic Scientific Student
   Conference on Informatics, 2009

7. Viet CN, Marshall IW,"Vision Based obstacle avoidance for a small Low-cost Robot",
   International Conference on Advanced Robotics (ICAR), 2007


10. Greiger Andreas, Lenz Philip, Stiller Christoph and Urtasun Racquel, “Vision meets
    Robotics: The KTTI Dataset", International journal of Robotics Research (IJRR), 2013


Index Terms

Computer Science

Automated Systems

Keywords

Stereo Vision, Obstacle avodiance, UAV,OpenCV