Autonomous landing of quadrotors on stationary and moving platforms using monocular vision from onboard camera

Image processing

Segment landing platform from background
Identify relative position of platform in image frame

Guidance

PID-based guidance command to move right/left to align with platform

Communication

Protocol to communicate onboard video to ground station and computed guidance command back to vehicle

Contributions

Vision-based guidance algorithm that uses simple image processing to extract required features

Communication protocol to communicate between the vehicle and ground station

Simple modeling mimicking reality

Efficacy demonstration through simulations and flight tests

Papers published

Karaya, R.R., Nayak, V.U., & Shafeeq, M.E.T., Autonomous tracking and landing of a quadrotor on stationary and moving platforms using only vision, *Advances in Control and Optimization of Dynamical Systems*, Feb 2018, Hyderabad, India.

Karaya, R.R., Shafeeq, M.E.T., & Chawla, K. Station-keeping of a quadrotor using monocular vision, *Symposium on Applied Aerodynamics and Design of Aerospace Vehicle (SAROD)*, Dec 2015, Thiruvananthapuram, India.

Contact: raksharaok18@gmail.com