Improving Pixhawk visual automated landing system

We are a group of four students at the Drone Technology study at the University of Tromsø in Northern Norway. We are currently planning on a solution of improving the IR-LOCK based landing system to the Pixhawk flight controller. This project will be our bachelor thesis for our study.

As Everdrone is a high-class company within developing software for autonomous UAVs, we see Everdrone as an inspiration and a possible partner for making this project doable.

Our system is based on communication between an on board raspberry pi and a Pixhawk. The two systems will be communicating with each other through the MAVlink protocol. The raspberry pi will be processing the data from a Pixycam installed with an IR-LOCK sensor. The Pixycam will be searching for an IR-beacon placed on a landing pad. Through processing the data received from the Pixycam, we want to coordinate a horizontal guidance for the aircraft and alongside a LiDAR sensor land the aircraft on the pad with a precision as high as possible.

As mentioned there is already a system that exists using this combination, but it is fairly unreliable, as the uncertainty upon landing is pretty variable.

Our system will be automated. The raspberry pi on board will be communicating with another raspberry pi located next to the landing pad. This raspberry pi will be emitting its GPS position and guide the aircraft at a fixed height towards the landing pad. When the aircraft has detected the IR-beacon and has a sufficient precision, it will begin descending towards it, initiating landing mode. The descend will only happen if there is sufficient

Our reason for this approach is to improve the solution to mitigate the problem involved with GPS supported landing systems in areas where GPS is unreliable. These areas might be areas with high chance of multipath occurrence (as in cities) and interference due to magnetic waves (as in operations in offshore).

If our project for bachelor thesis sounds interesting to Everdrone or if you would like to hear more about it, feel free to contact me on e-mail or telephone.

I hope to hear from you.

Kind regards,

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