The Best Laid Plans of Drones In Flight: Drone Traject Planning and Object Avoidance
2020-2021

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Project Summary

Unmanned Aerial Vehicles have applications in a variety of fields, including surveillance and geospatial mapping. By using a pre-programmed flight path, scientists can use drones and other UAVs with minimal experience and in various outdoor environments which increases the efficiency of their data collection; maximum efficiency for UAVs involves no human operator at all.

Therefore we designed a program so the Tello Ryze drone can conduct autonomous flight using MathWorks MATLAB software and its OpenCV library for computer vision to create flight plans for the drone, and we will add capabilities for object avoidance. To develop the code, we defined the flight plan with waypoints and then established a wireless connection between the drone's sensors and the computer program. Once established, the drone followed a designated flight plan and used its camera to avoid objects in its path and adjust the flight plan accordingly.

Our project connects to the Center for Energy Systems' mission to engage students using technology and will contribute to the long-term development of the Center's robotics program and student outreach. And in duing so uses perception related research to aid scientists in a variety of breakthrough fields.

Project Video
https://youtu.be/UvIrIPK1FfU

Source Code
Please send an email request on the contact form if you would like a copy.

Awards and Recognitions

- Presented at the 2021 Gatton Student Reseach Showcase, Conducted Virtually Due to COVID-19
- Presented at the 2021 WKU Student Research Conference, Conducted Virtually Due to COVID-19

For additional project details please use the contact form.