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Executive Summary

Currently the SAUS club is designing a drone for the SAUS competition. The drone from last years was damaged when the drone lost attitude and crashed. The drone lost attitude due to an error in the code. However, further errors or unexpected circumstances could lead to another crash. This year the drone is required to lower an autonomous ground vehicle requiring attitude detection and adjustment. Currently there is neither and no plans to develop them.

I want to propose the development of an attitude adjustment and detection system. To do this, I plan on using openmaps and updating the current imaging system. Openmaps is already used in the are current flight systems for flight navigation. There is a feature that returns the current attitude of the computer; however, it has yet to be implemented. Unfortunately, openmaps only updates every second. A crash can occur in a second. To deal with this, the data received will be used to keep track of previous attitudes and with the detection system to find the current attitude. This can be done by taking the images the drone takes and using an algorithm to detect the distance from the ground. Then I use both to find huge changes in attitude. If a change is found, the propellers will be adjusted.

Currently I have written an algorithm that can somewhat accurately take an image and estimate the height. The algorithm seems to have a range of error ±5. The algorithm needs to be improved.