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VISION-BASED NAVIGATION AND CONTROL OF UNMANNED AERIAL VEHICLES

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Vision-Based Navigation and Control of Unmanned Aerial Vehicles

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ABSTRACT

The use of visual recognition to control unmanned drones is a relatively new field of research. The pathing especially can come in many forms, usually in the form of giving destination points which get turned into directions and altitudes for the flight. In an attempt to create a more intuitive control experience we are implementing a visual shape pathing algorithm. This means that instead of feeding some destination, we can draw some shape that the drone's pathing will track. To accomplish this we are using the popular mathematics programming language matlab, which allows us to make a control scheme for various functions of the drone. Next we developed a system to track the movements of the drone using a visual recognition algorithm that follows certain color on the video feed. Finally we want to implement some machine learning aspects by tracking the drone's distance from the original provided shape, creating a self-correcting pathing system to closely follow the shape. By creating a shape based pathing system, we are enabling a more intuitive way to draw pathing for unmanned aircraft on any scale from the micromanagement in a factory or warehouse setting, to the zoomed out pathing of a cross-continental map.

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