



SENIOR DESIGN PROJECT SYNOPSIS – FALL 2013

UNMANNED AERIAL VEHICLE WITH FIRE EXTINGUISHING RELEASE MECHANISM AND INSPECTION SYSTEM

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This team will design and build an unmanned aerial vehicle (UAV) that will have two purposes: firefighting and inspection. An UAV is an aircraft without a human pilot on board. Its flight can be controlled autonomously by computers in the vehicle, or by remote control under the direct command of a human. Our firefighting method will consist of using fire extinguishing grenades. This type of grenade is in the form of a ball, weighs around 1.5 kilograms and is filled with a chemical that fights fires. The grenade activates by itself when fire is present (around it).

During the development of the design, the skyfighter team is going to be focused on the creation of a mechanism for firefighting grenade deployment. The UAV will be capable of delivering the grenade in an area that is hard to approach by conventional methods or is more expensive to do it in other ways. Once this system is up and running, a camera is going to be added to the UAV, and the second application takes place, which is inspection by live video recording and pictures.

The requirements of the UAV consist of launching the fire extinguishing grenade inside the window of a building that is on fire and have a camera that is recording what is going on in the surroundings of the UAV. In order to do this, we have decided to use a quadcopter. A quadcopter is an UAV with four rotors with capabilities of lifting and carrying a specific payload.

The release mechanism is located on top of the frame of the UAV. The ball is going to be launched using springs that are going to be compressed and that will propel a launching ring that at the same time will propel the grenade. The activation of this mechanism will be done using a servo motor that is activated by a switch the operator pushes in the remote control.