



SENIOR DESIGN PROJECT SYNOPSIS – SPRING 2013

UNMANNED AERIAL VEHICLE

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Technology is advancing faster than it ever has. The field of robotics is taking over, replacing human input and allowing miniaturization of systems to a size previously thought unimaginable. Autonomous systems in flight are the future of aviation. Smaller, faster, better systems are being developed for a wide array of applications, utilizing unmanned aerial vehicles in applications as varied as the imagination. From research and scientific applications where situations pose a danger to human life, to military engagements where soldiers are engaging the enemy from a continent away, the future of unmanned systems is here to stay.

The purpose of the senior design project is to develop a product which incorporates the interests of the team members such as aviation and robotics. The project is an exercise in flight mechanics and mechatronics, two fields of engineering that have garnered much attention in the past few years with the increasing frequency of drone reports from the military in news media. The development of an unmanned autonomous vehicle challenged us to use our knowledge of engineering systems taught at school, as well as requiring us to research and acquire new knowledge in order to complete the project.

Along the development of the platform came many challenges. Deciding on a platform early on would set the difficulty of our project. From previous teams unable to make airplanes work properly, a quadcopter design was chosen due to its apparent simplicity and ability to easily carry payload easily. Its flight mechanics were investigated as well as its electronics studied in order to give it the capability of transmitting video wirelessly as well as accessing remote wireless signals, and most importantly of all the ability for autonomous unmanned waypoint flight, GPS data integration and an estimated 40 minutes of flight time.