

Senior Design Project Summary Sheet **for Publicity and Marketing**

By Sept. 30, 2014, each CECS Senior Design team is required to submit the following completed form, either electronically or hard copy, to:

Kimberly Lewis, Director of Marketing
UCF College of Engineering & Computer Science
Harris Engineering Center, Room 115B
Kimberly.Lewis2@ucf.edu

The information collected is required for inclusion in the printed materials related to Senior Design Day 2015.

In addition, some projects may be identified as having potential value for marketing or the news media (UCF media as well as external media). Your team may be contacted by the CECS Marketing director to learn more about your project and possibly follow your team's progress in the months leading up to Senior Design Day.

PROJECT NAME (please spell out acronyms or define them in the summary section below):

Unmanned Ground Land Mine Detector (UGLMD)

SUMMARY

(In non-scientific terms, describe the problem that your project aims to solve, and then describe your project, answering all that apply: What does the project do? Who needs it/who would use it? How does it work? What are the dimensions (if applicable)? Why is it different/ better than what's available or has been done before? What are the possible applications? Are there other "selling" points? (Ex: it provides a low-cost way to do something; it makes something easier to do; it makes something last longer; it's never been done before, it conserves energy/water and/or reduces pollution, etc.)

Most people in the United States don't have to worry about stepping on a landmine or triggering an Improvised Explosive Device (IED) when they go about their personal lives; however, in many other countries around the world, this is a significant concern. Around the world, there are about 110,000,000 active landmines, waiting to be stepped on. According to the UN Mine Action Service, landmines kill 15,000-20,000 people every year (mostly children) and many countless more. Furthermore, the use of Improvised Explosive Devices has become a preferred method of engagement in guerrilla warfare. According to casualties, more than 50% of all casualties in Operation Iraqi Freedom and Operation Enduring Freedom have been caused by IEDs. We are aiming to design a device that will autonomously scour lands, detecting and marking the location of possible land mines and Improvised Explosive Devices (IEDs) for safe removal or detonation. We will be creating a rover platform that is sturdy enough to support a sizeable lever arm that will contain a metal detector to detect the metal landmines and a LIDAR system to provide local area vision. At the current rate of clearing mines, it will take humans thousands of years to clear all active landmines in the world, and countless more detecting for buried Unexploded Ordnance (UXO) that can be used for IEDs. That is where the motivation for our Senior Design project resides.

The device will operate in such a fashion that will allow it to autonomously cover a predetermined path, and determine if this path is "safe", or free of landmines. The device will be about 1.5 feet wide by 1 foot long at the base, with a lever arm that will extend approximately 1 foot beyond the length of the base. The device will sit at about 0.5 feet tall, to allow for room for a proper moving mechanism. There are plenty of other land mine detectors, but ours will use a combination of ultrasonic sensors, Lidar detection, and metal detection to ensure the most accurate results, so that neither mines, nor Improvised Explosive Devices (IEDs) go undetected. Also,

we will implement a physical and geographical marking system to create an immediate clear path and a mapping system that will document the mines detected within a certain area.

TEAM MEMBERS

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