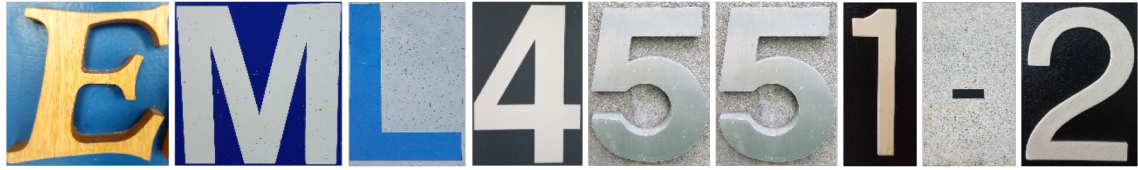


1/11/2019



Team 307: Emergency Management

Drone

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Project Scope

The current iteration of the client's drone, while functional, is not practically useful and needs to be improved to be effective. In particular, the range, flight time, and camera stabilization are of vital importance. Moreover, the client has also requested a number of improvements to the user interface, including autonomous flight. The design must be made with reliability and longevity as primary characteristics. If successful, this drone design could be used not only in emergency situations, but also for general wide-area searching.

The primary users of this design will be the Department of Emergency Management and Homeland Security (EMHS), but could also be used by various organizations including the FBI for kidnapping cases, conservation groups for counting animals, and penitentiaries to aid in the capture of prisoner escapes. The final product of this design will also be able to aid in environmental disaster surveys and reliefs. The city of Tallahassee could be a tentative stakeholder for this project. Several departments such as the police and the fire department would benefit from having an Emergency Management Drone at hand for situational purposes.

Key Goals

The key goal of this project is to create a drone that can search a large area of land efficiently and quickly. While in use the drone must be able to communicate with at least one device on the ground. While the previous drone is available, it is not required to use primary aspects of its design. It must be able to be easily moved by hand or by car when not in use. Most importantly, the modifications must be completed by April 2019.

Markets

A variety of drones can be utilized for emergency management situations. Drones allow the use of emergency management personnel to evaluate a situation using aerial footage to reduce the risk of endangering humans while examining a hazardous scene. Although the drones used for each situation vary, there are similar markets to the FSU's Department of Emergency Management all of which utilize the use of drones. Every state in the United States has an Emergency Management Department or a Bureau of Homeland Security. Along with state agencies, the US Department of Homeland security provides emergency management on a national level. Private companies such as Global Rescue and Medjet also provide assistance in medical, security and crisis response situations. Although there are different markets for emergency management and homeland security, there is very little competition between each department seeing that in the case of an emergency state local and national departments will work together to safety manage a dangerous situation. As for the private companies, personnel must purchase a membership to be insured for their assistance in the case of an emergency. Those who purchase memberships usually do so before traveling or participating in an activity that has the risk of needing emergency medical assistance. Global Rescue and Medjet work on a global scale for individual and government needs.

Assumptions

It is assumed that the vehicle will be battery powered and it will be able to operate at a safe distance. It is also assumed that the vehicle will need to be able to scan a designated area for objects. Once these objects have been found, it is assumed that the vehicle will then tag the area for further search that will be performed through other means. It is also assumed that the vehicle will be easily repairable and user friendly, since the vehicle will be needed in contexts ranging from local to state needs.

Stakeholders

All parties to be affected by the success of this product include our sponsor (David Merrick), advisor (Rodney Roberts), overseeing professors (Shayne Mcconomy and Jerris Hooker), and any persons who would rely on the drone in the case of an emergency. The success of this product will be taken very seriously to ensure that all of the stakeholders are not negatively affected.

Code of Conduct

Mission Statement

Senior design team 307, Emergency Management Drone, is committed to creating a work environment that supports open communication between FSU's Department of Emergency Management and our team. We are committed to providing a high-quality product that exceeds any client's expectations.

Roles

Each team member is delegated a specific role based on their experience and skill sets and is responsible for all here-within:

Team members:

Project Manager – Haley Barrett

Haley is a senior undergraduate student at Florida State University. She is responsible for coordinating all team meetings and maintaining communication between the group. She will complete revisions of all reports before they are turned in and create an organized agenda of upcoming deadlines to be shared with all group members. If a task is needed to be done that is not included in the scope of any of the team members role she is responsible for assigning it in a fair manner to one of the members. Other duties will be assigned to the member with the most experience in such task.

Test Engineer– Juan Patino

Juan is senior undergraduate student studying electrical engineering at Florida State University. He is responsible for the testing of the prototypes and final design with the aid of all members

from the team on both the mechanical and electrical side. Juan will have the final say on how and when testing will be completed. Along taking charge of the testing of the product, he will also be responsible for the financial side of the project including maintaining organized records of all credits charged throughout the project. He will maintain communication with the sponsor, The Department of Emergency Management at FSU, and the College of Engineering while purchasing parts and components pertaining to the project.

Lead Mechanical Engineer – Kody Koch

Kody, a senior in mechanical engineering study will take the role as the ME lead. He coordinates the mechanical side of the project, and is responsible for all the mechanical details of the design. He also helps coordinate the mechanical departments interactions with the electrical department in order to work more efficiently. Kody also assist with Matlab and C++ coding along with refactoring.

Lead Electrical Engineer – Matthew Roberts

Matthew is a senior undergraduate student studying Electrical Engineering at Florida State University. He also is an intern under the City of Tallahassee Utility Power Division, and as an undergraduate researcher at CAPS, researching Power Electronics under Dr. Li. He is responsible of the EE, IE, or CE design part in support of the project. He maintains line of communication with the lead ME, and manages the construction of the project circuitry.

Designer/Aerodynamic Engineer– Josh Reid

Josh is an undergraduate senior at Florida State University studying Mechanical Engineering. As the Lead Designer and Aerodynamic Engineer, he works to ensure that all aerodynamics are accounted for in the design of the aircraft, while also developing any additional CAD designs needed for the aircraft.

Programmer– Francisco Silva

Francisco (Frank) studies electrical engineering at Florida State University with focus in microprocessors and electronics. As the programmer, Frank will take lead on image processing and electronics, as well as pre-programming all microprocessors to be prototyped. Frank will assist in the development of the team's website.

All Team Members:

- Provide input to all aspects of the project
- Show effort in areas of the project that are not their expertise
- Delivers on commitments
- Listen and contribute constructively
- Put forth best effort to be present at all group meetings
- Be open minded to others ideas
- Respect others roles and ideas

Communication

The main form of communication will be through the app Discord, a group messaging platform. The group will stay in contact weekly as needed, and will meet in person once a week at the minimum. Constant communication within the group is a successful tool for timely completion of tasks for the project. In order to maintain this constant level of communication, the appropriate delay in response is 24 hours. The exception to this will be if it has been discussed previously with the group, that a member will be unavailable to communicate due to some outside reason (ie. health, vacation, emergencies, etc.).

Communication with advisors, sponsors and reviewers will be done mainly through email, but in person meetings will take place as needed with respect to attendee's schedules. These meetings will be scheduled primarily through email, but if no response is received within a reasonable amount of time, other means such as phone calling or visiting their office in person will be used to schedule these meetings.

Team Dynamics

Open communication is encouraged between group members, and nobody's ideas should be discouraged before discussion. Teamwork and cooperation are a key focus between group members.

Ethics

Team members are required to follow NSPE Engineering Code of ethics as they are responsible for their obligations to the public, the client, the employer, and the profession.

Dress Code

Team meetings will be held in casual attire, whereas meetings with sponsors, advisors and reviewers will require business casual attire. Dress code for presentations will be held in business attire.

Attendance Policy

Team meetings will be held weekly on Tuesday or Thursday afternoons at the earliest convenience after the ME's senior design class. Throughout the week the group will maintain communication and meet in person as needed. If a member of the group fails to meet excessively, the matter will be brought up to the instructor pertaining to that student's engineering discipline.

Decision Making

In efforts to create a fair decision-making policy, a voting system will be implemented where majority is in favor. Input of all students in the group will be required to dictate an equitable decision.


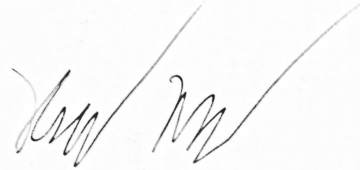


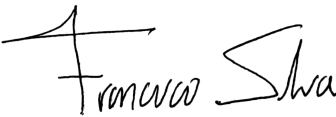

Conflict Resolution

In the event of a disagreement between a member of team 307 the following actions will be implemented:

- A group meeting will be scheduled to administer a group vote, favoring the majority.
- If a member of the group is still dissatisfied, an instructor will facilitate a resolution.

Statement of Understanding

By signing this document, the members of Team 1 agree the all of the above and will abide by the code of conduct set forth by the group.

Name	Signature	Date
Haley Barrett		01/11/19
Kody Koch		01/11/19
Juan Patino		01/11/19
Joshua Reid		01/11/19
Frank Silva		01/11/19
Matthew Roberts		01/11/19