Team Introduction

My name is Antonio Foster and I am an electrical Engineering major. Today we are here to update you on the progress of the Paintball Environment Tactical Engagement Recon System, otherwise known as PETERS.

Outline

Okay, to start off we will talk a little bit about the problem statement and the solution that we are proposing. We will go over our budget up to this point, and standards that PETERS must adhere to. We will talk about the progress we’ve made so far, and the work that is yet to be done. And then we will end with a short video that will give a great overview of the project as a whole and includes a live demonstration of some of the system functionality in use. Now Rick will get us started with the problem statement.

Fall Progress

During the fall quarter we purchased and acquired what we though were all of the project components. Since there were some main system changes over the break, there were other components that needed to be purchased, which we have done. We did a lot of preliminary testing of the sensors that we will be using and tested various mounting options for those sensors. During the fall quarter we were still figuring out the best way of collecting the data we needed so a lot of time went into that.

Winter Progress

During the winter term we have made some small adjustments to how the system will work. In place of a break beam system for determining paint levels, we have opted to go with an ultrasonic sensor in conjunction with an accelerometer/gyroscope. Using the accelerometer, we will be able to track the orientation of the marker to ensure that only meaningful data is stored. We obviously don’t want to take paint measurements while the marker is either pointing straight up in the air, or pointing down at the ground because the paintballs move around quite a bit inside the hopper and taking data during those times would not give us a realistic idea of the amount of paint left. We have utilized 3D modeling to design prototypes for mounting system components to the hopper and air tank, and we are using a 3D printer to realize those prototypes. Currently the system components for measuring paint levels have been mounted in an attachment we 3D printed. We’ll pass this around. You can see all the components mounted inside as well as the removable power bank. There is also a switch inside so the system isn’t just running as soon as you plug a battery in. The attachment for air tank is currently being designed and will have similar aspects as the hopper attachment. Removable, rechargeable power bank, on/off switch ect. We also have decided to make the air tank wireless as well. The original idea was to have a wired connection between the air tank and the players processing unit. But we thought to make the system more user friendly and less cluttered, we wanted to avoid adding any unnecessary wiring that forced a constant connection between the player and the marker. In the images here you can see our final 3D model for the hopper attachment, and then the realized hopper attachment next to it. Now Brett will talk a little bit about the software progress this term.