FlySense

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Team C: Flysense
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Individual Progress:

For this progress review, my goal was to get the sound working on the Epson headset and also prepare a setup on other devices that can make it easy for viewers to see what's happening inside the headset.

Sound:
My job here was to basically get commands over from the Jetson using ROSJAVA and then implement message handlers in AndroidJava to retrieve, convert and run a loop to produce sound (see figure 1).
I implemented Joao's code from last semester which basically just uses a countdowntimer to loop/repeatedly do function calls. This function will be called every time the Epson receives a command from the Jetson; we also play three different levels of warning based on severity.

Devices:
This is a bit tricky because the app we developed for Jetson had specific resolution constraints which cannot be installed on other devices without handling resolution variation.

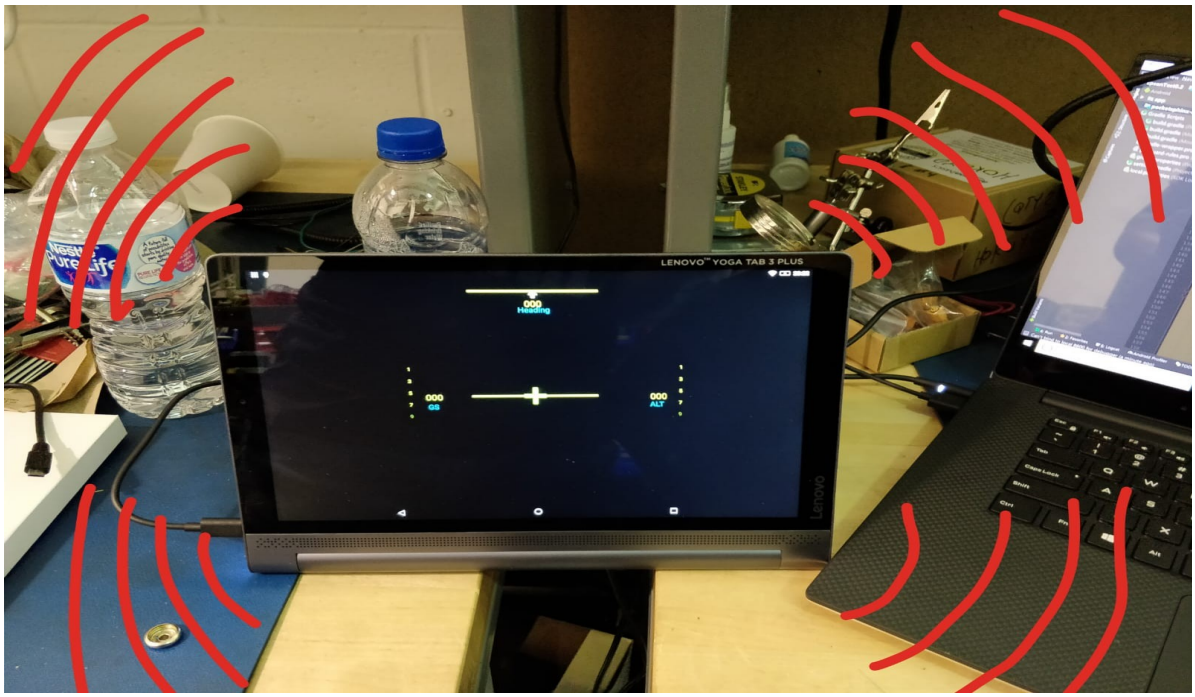

*Figure 1: Android Device Producing sound**
*I did not know how else to picturise sound.

Team Progress:

1. We have flight tested the fully integrated system in Nardo. David Murphy, a pilot from NEA, was really impressed with our progress and wanted to extend this system to other applications which would have more value.

2. We have completed fine tuning the colors for obstacle detection and attention factor based on pilot inputs and have almost wrapped up that section.

3. Real time coloring and sound warnings working with fully integrated system. The coloring now depicts a 3D model of the world and the birds eye view only shows nearest obstacle in 3D (embedded into color space).

4. Got the system up and running in simulation (see figure 3).

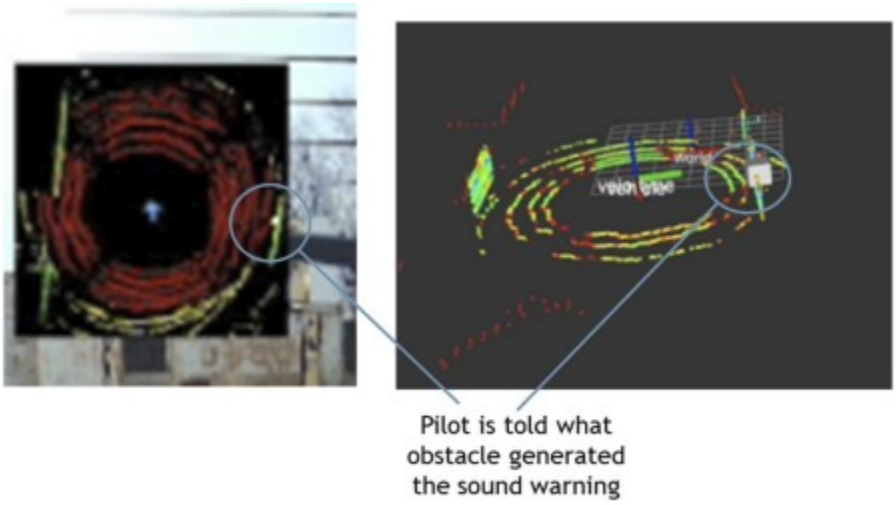

Figure 3: Blinking dot indicating source of current sound warning

Risks:
Almost all risks have been accounted for so far, but still there might be some issues that are not under our control like the weather and quad failure.
Technically, most of our issues are in testing the robustness of the system, right now everything works well, but the question we will be looking to answer is if this system can work perfectly everytime.

Problems faced:

As mentioned before, I had some difficulty in setting up the application for other devices due to changes in resolution. Apart from that, losing points on ILRs has been a recurrent issue this semester (we never really had these issues in the first semester), I will probably be getting a B in this course now even though our sponsors are super happy with our work. Which is kind of disappointing.

Team Milestones:

A good presentation during the Robotics week and a successful flight at Nardo is what we are looking at especially with all the new features added, we are looking forward to some good feedback from the pilot so we can improve on it.

Personal Milestones:

Make sure the augmented reality device doesn't fail on the D-day. Conduct a series of tests to see if the system is robust and make changes as necessary.