Project Milestone 1

Team Number: 207-1

Team Name: 3 Headed Lizards

Team Members:

Richard Dudley Ortecho
Layan Makhtoum
Connor Ely
Zixin Chen
Theo Lincke
Ryan Horn

Application Name:

Eagle vs Lizards

Application Description:

Eagle vs Lizards is “video” game that allows a user to control a drone, the “Eagle”on their phone in search of “lizards” with QR codes on their person that will store stats and discoveries of players in a database once the code is scanned by the “eagle”. The drone operator will try to get close enough to scan the code, while the lizards will try and avoid being scanned, or “eaten”..

Vision Statement:

The Eagle vs Lizards application is a drone mobile interactive game that can be played during daylight. It is for Drone enthusiasts (specifically for Mavic Air) who want to play a game with QR Code. The Eagle vs Lizards application is a game where one controls the eagle trying to chase down the lizard that will provide a fun active scenario that many will enjoy. Unlike laser tag, our product can be played at anytime and requires no pre-game briefing.

Version Control:

Project code and components:
https://github.com/Three-Headed-Lizards/All-project-code-components.git

MileStone Submissions:
https://github.com/Three-Headed-Lizards/Milestone-submissions.git

Team Meeting Logs:
https://github.com/Three-Headed-Lizards/Team-Meeting-Logs.git

Development Methods:

Scrum is our preferred development method.

During our daily meetings we will perform a “standup” with each team member where they each describe the weeks progress and what they hope to accomplish the next week. They will then describe the tickets they have been working on.

Each ticket will be laid out with the typical “As a Developer” or “As a game player” to then lay out what needs to be done in the code so that the ticket is accomplished.

Each ticket will then be in an “epic” where several tickets exist and they all tie into the “epic” where they accomplish a goal. An example of an epic would be receiving the augmented video feed from the drone and display it on a mobile device.

Communication Plan:

Our main source of communication will be through meeting face to face every week. Here we will discuss the plan for the week and what we hope to accomplish. To support an open line of communication, we will also be using Slack to notify members outside of meetings what we have discovered, accomplished, or missed. We will also be utilizing the basic scrum board in github to create new tickets that then can be redistributed to other team members who want to code that feature or bug.

Proposed Architecture Plan:

The app shall be modularly split into mission control, mission status and user endpoint sections. Using a primarily object oriented framework in C++17 and Java, Eagles vs Lizards will utilize backwards code compatibility by erecting an abstract code architecture (interface and runtime loadable applications) to ensure future growth in the code base.

1. Network Architecture
   Dragons vs lizards should decrease latency in high scale data transmissions by implementing smaller network packet sizes and only the necessary data components. The exhaustive drone resources (camera, telemetry) etc. Should operate on a low to high data rate basis. Users should have to choose to increase data usage rather than chose to decrease data usage. Thus, the architecture shall be based on a simple publisher, subscriber stream layout using a simple message broker / distributed directory service (the ROS architecture).

2. Mission Control
   Users shall be presented with a simple, yet verbose control gui in order to manage their drones. This endpoint should provide telemetry, as well as mission status through real time camera support.

3. Dependencies:

Given the vast Mavik air documentation and support, we will be implementing libraries written in the Mavik api. Similarly, Mavik supports ROS, which allows for april tags recognition from MIT's April Tags software library.

Meeting Plans:

We plan to meet twice a week, once on Tuesdays from 6~7 and on Fridays after our lab section from 4~5. We plan to meet face to face in a room in the engineering center, in the ITLL if a room is available.