Team 1 CSC 4350:

Software Engineering

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Team Members:

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Project Name: **Drone Surveillance System**

**INTRODUCTION:**

We are developing Drone surveillance software, the goal of this software is to detect motion from a drone that has been set to patrol a certain perimeter designated by the user. This software will compose of multiple parts which can be broken down into components such as Motion Detection, Alert System, Night-Vision, Flight Pattern, User Communication, User Tracking, and Various Others.

Motion Detection is the main factor of our surveillance system as the drone will require the use of motion detection technology to track potential threats in the area. The motion detection system will require a form of an infrared scanning system to detect heat signatures in objects in order to differentiate between living and inanimate objects. The motion detection systems must also have a minimum size for alerting objects in order to prevent false alarms from smaller animals. This system will also require a method to record objects that trigger the alert system for user playback.

This Software will also require an Alert system to notify the user of unusual activity. This system must be implemented to communicate between the User Platform and the Drone’s Motion detection technology in order to identify abnormal motion and process it as an Alert. The software must also allow the user to set a designated area of surveillance for the drone and must also contain a low-storage cloud database in order to store footage of triggered alerts. This system will also require formatting different alerts and notification methods so that the user can select their desired method such as Text, Call, or Email.

Night vision will be important to the system for identifying persons or objects in low to no light conditions, night vision must be implemented into the drone's motion detection technology because our system will guide the drone to autonomously patrol the desired area through all times of the day, the ability to see in low light conditions will help our motion detection system survey the area as well as allow users to see viable footage of the triggered alert.

We hope to create this software in order to create a system in which motion detection surveillance can be paired with the growing technology of drones and be expanded to a greater range and increase security amongst the users.

**Technologies:** We are planning to use Java, Html, Android studio for our software, We are planning on dividing the workload between the different languages using java for components such as drone flight pattern, alert management, and more, while using Html and Android Studios to create the User interface required in order to program the desired inputs such as Surveillance area and Notification reception settings. We are still reviewing programs to implement Infrared and Night-Vision Softwares.

**TEAM BIO:**

* **Ri Joo** - I am a senior computer science student at GSU with about 4 years of experience. I have moderate knowledge in HTML, CSS, C#, SQL, JavaScript, and working knowledge of Java and Python. I am working at my full time job as a software engineer. So, I have good experience in software engineering and some language skills to develop and improve the team project.
* **Aboubaker Sherif -**  I am in my last semester of my undergrad, and I am trying to complete my degree which is a Bachelor of Science in Computer Science. I have taken many classes for my major which include Principles of Computer Science I & II, Discrete Math, System-Level Programming, Data Structures, Computer Organization & Programming, Artificial Intelligence and more. I have intermediate knowledge of Java, HTML, and CSS and beginner knowledge in JavaScript, Python, PHP, and SQL. All these classes helped me to be a better coder and critical thinker when going about my work and I believe will prepare me to become a great software engineer. \
* **Kimani Guchu -** I am a senior computer science major in my final semester at GSU. I have moderate experience in C, C++, Java, and Html. I also have some experience working with python but am not as fluid. I have created many projects using Java and C++ mainly. However, I am a quick learner and good at understanding concepts and i am currently learning more about python and html.
* **Mohammed Altamash -** I am in my final semester of my undergrad and hopefully will be graduating with bachelors in Computer Science. I can work with a few major programming languages like Java and Python and also I have done a few hackathons .

**WHY WE PICKED THE PROJECT:**

We picked this project because drone technology is a rapidly growing field and security is also an important aspect to human survival thus, we believe a system that can implement both properly will be greatly beneficial.