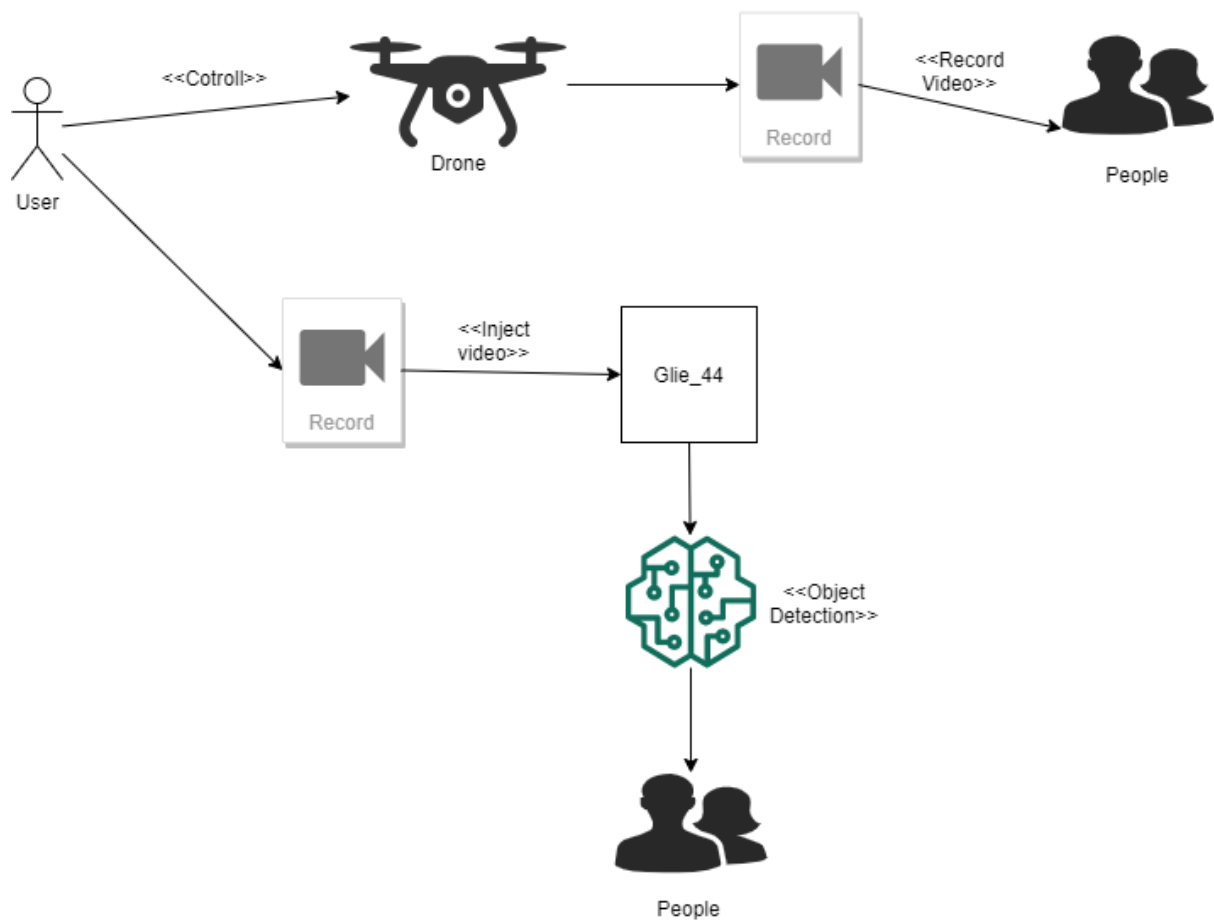


KF5012 – Software Engineering Practice

Poe Dameron

Solution Design Report

Solution Diagram



Solution Description

The Glie-44 (model) is a desktop-based software, which detects people from the videos recorded by a drone. The model is specifically designed for security forces to identify people from videos recorded by a drone. To identify people using the model, first, the security forces must record a video using a drone in a place, where they need to monitor. Secondly, they need to inject the recorded video into the Glie-44 model. Then, Glie-44 uses machine learning and draws boxes around the people, identified from the recorded video. In this way, the Glie-44 identifies people from drone-mounted videos using machine learning.

Data Description

The model must be trained on various datasets to accurately detect objects. The dataset required to train the model must contain various types of images and videos of people, which are taken in public places. The dataset must contain drone-mounted visuals to help the software detect people from an aerial view. The dataset should also contain visuals taken from different environments, conditions, and atmospheres to strengthen the accuracy of the model.

Solution Motivation

In the present world, drones are used to facilitate humans for various purposes. Drones are used to shoot photos, record videos, view places that cannot be accessed by humans, collect data from high elevations, and so on. But, there is one purpose where drones are significantly helpful to humans and that is security. Drones can be used to contribute significant security to humans. Security is very essential for every person and it is the responsibility of every organization to provide security to its people. Here organization may refer to any society which guarantees security to its people. There are many ways in which an organization provides security. One traditional way of providing security is by employing security guards.

Most organizations employ security guards to provide security, but security guards have their limitations. Some limitations of the security guards are mentioned below.

- The guards cannot monitor overly crowded locations.
- Locations that cannot be accessed by humans.
- Guards may feel fatigued and tired during the day, and so on.

In such scenarios, drones are very helpful to empower security guards. Security guards with the help of drones can extend their surveillance power to supervise any disturbances occurring even in a very challenging environment. But if the drones are integrated with advanced technologies like Machine Learning and Computer Vision to identify the people in the visuals captured by drones, then it gives tremendous strength and evidence of what the security guards are seeing. This might open the doors to a new level of security.

There are already some companies, which have built drones integrated with Artificial Intelligence and Machine Learning to detect objects. According to (Daley, 2020), there are at least seven companies, which have already built drones using AI. They are mentioned below.

1. DroneSense
2. Neurala
3. Scale
4. Skycatch
5. Applied Aeronautics
6. Above
7. Aerovironment

These companies have undoubtedly built amazing drones empowered with Artificial Intelligence. And, being motivated and inspired by the research and innovation done by these companies, the Glie-44 software is specifically designed to facilitate security guards and other security forces to monitor their surroundings and help them detect

people from the visuals, sent by a drone, to provide proper security. This model might surely help security guards and other security forces in providing significant security to the people as well as improving their work efficiency.

References

Daley, S., 2020. *FIGHTING FIRES AND SAVING ELEPHANTS: HOW 12 COMPANIES ARE USING THE AI DRONE TO SOLVE BIG PROBLEMS*. [Online] Available at: <https://builtin.com/artificial-intelligence/drones-ai-companies> [Accessed 23 May 2021].