

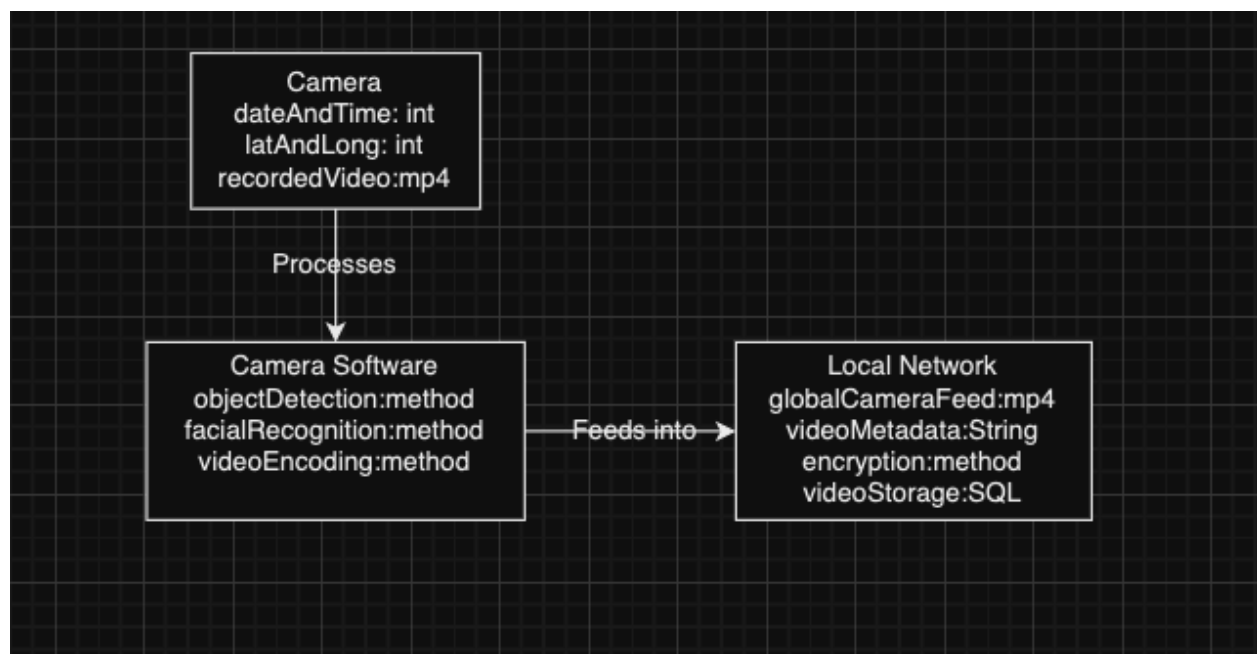
## Security Camera

**Team Members:** Jaeden Sarabia, Dante Manansala, Ronald Bolden III

### System Description

Our system is a security camera that can be used in business buildings. The purpose of this system is to increase the security and safety of the people in the building by having the camera oversee parts of the building to track any suspicious or dangerous activity. The devices of this security camera will include object and facial recognition, video access through an app or website, video streaming and storing, and security encryption. There will be multiple cameras set up around the building with image soothing that can all be connected to a local network. This system will affect the employees and visitors of the building by making the building a safer place with cameras around. It will also affect the security team or admins of the building by making it easier to track the activities in the building and see any suspicious activity.

### UML Diagram

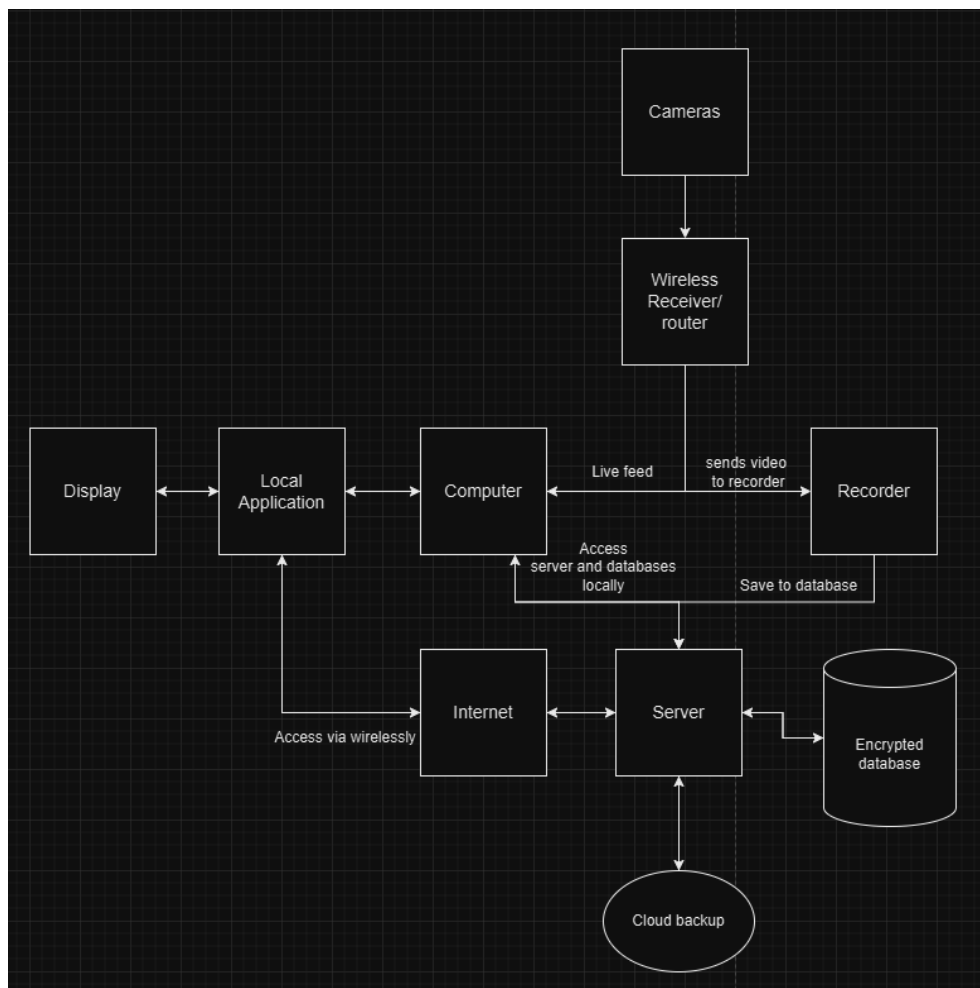


### Diagram Description

In our system, we will have a Camera class that declares and stores the information of the date and time of the camera's video, which will be an integer variable called dateAndTime, the location of the camera's video, which will be an integer variable of the camera's longitude and latitude called latAndLong, and the recorded video from the camera, which will be an mp4 file called recordedVideo. The camera will then be processed by the Camera Software class that holds the methods of objectDetection, facialRecognition, and videoEncoding methods. The objectDetection method will be able to take in an image from the video and detect the objects recognized by the camera using patterns of an object's attributes like color or size. The

facialRecognition method will be able to take in an image from the video and detect and recognize the face of someone using their facial attributes such as eyes, nose, and cheeks. The videoEncoding method will be able to take in a video file saved from the camera and convert it into smaller digital files so that they can be stored and become playable with playback when they are accessed. The methods from the camera software will then be able to feed the information to the Local Network class that holds the information of globalCameraFeed, videoMetaData, encryption, and videoStorage from the cameras. The globalCameraFeed variable is an mp4 file that stores the live video feed from the camera. The videoMetaData variable is a string variable that holds metadata of the video from the camera, such as date or location. The encryption method will be used to protect all of the information from the cameras by using a certain key to keep the information from being accessed by malicious users. The videoStorage variable will use SQL to store information about the video, such as the playback file, the objects in the video, the length of the video, etc.

## SWA Diagram



## Diagram Description

In our system, the cameras connect to a wireless router or receiver so that they can all share information together. The router is then able to send a live feed of the cameras to a computer and is also able to send the video from the cameras to a recorder. From the computer, it can either access a server to send information to the databases locally, it can receive information that was saved from the server, send video information to the app used for the cameras or receive information from the application. From the recorder, it can record a video from the cameras locally and save the recorded video into the database by sending it to the same server. From the server, it can either send information back to the computer, send information to be stored to a cloud backup, send information to be stored to an encrypted database, or send information to the internet. It can also receive information from the internet, encrypted database, and cloud backup as well. The encrypted database will store all of the video information from the cameras, such as video length, location, and time of the video, and can send or receive this information from the server. The cloud backup will save and backup any video information from the cameras in case something goes wrong and can also send or receive information from the server. The internet will access the server and will be used to access the application used for the cameras wirelessly instead of through a computer to access any video information. The local application will be used to connect to the server either wirelessly through the internet or through a computer and will be able to access any video information, such as video time, location, or length, or can access the live feed from the cameras. The application will then be displayed to the user so that they can use it to find any information on activity around the building.

## Development Plan and Timeline

### Tasks:

- Weeks 1-2:
  - Create camera
  - Implement camera interface with camera and coding software
- Weeks 3-5:
  - Create object and facial detection methods
  - Create encoding method
  - Create encryption method with key for security
  - Implement the database and cloud storage
- Weeks 6-7:
  - Implement informational methods into an app
  - Create UI for app
- Week 8:
  - Test functionality

**Team Member Responsibilities:**

- Jaeden: Create camera, implement camera interface
- Dante: Write methods and encryption
- Ronald: Create app, implement database and cloud storage