**Computer Systems Assignment 2 Motion Sensor Camera Solution**

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Github repo:

[https://github.com/jamesgeraghty/compsys\_assignment\_**2**](https://github.com/jamesgeraghty/compsys_assignment_2)

This Web API will be created using Event Based architecture.

When motion is detected the camera will take a photo, the images will be stored in the Firebase database and can be viewed in real time through a web application created using HTML and Java Script.

The Motion detected will also trigger a smart plug that will turn on a light in the house. The trigger will be done using a Webhook in the IFTTT web-based service. The Webhook will allow the smart plug and the Python Programme to integrate with each other.

The Firebase SDK will be used to connect the Raspberry Pi to the Firebase Database. A Python program will be created, that will allow the images generated by the motion sensor and the Raspberry Pi camera to be pushed and stored in the Firebase. These files are then stored in a public bucket. A “Blob” in the bucket allows the data to be accessed through a URL.

The data in the Firebase is stored in the JSON format, this is a good for storing real-time that is constantly changing. Each new motion will be assigned au unique key. This is done by creating a node in the database and then push JSON data in the database.

Using a real-time database like Firebase, will allow date to be added dynamically and an application that is connected to the database will have the ability to the display the data as soon as it has been added. The web application is connected to the database using WebSockets, this allows real-time persistent interaction between the client browser and a server. Data flow is bi-directional between the client and the server. Websockets uses HTTP to create the initial transport mechanism, but the TCP is kept alive after the HTTP response is received so that data will be continuing to send from client and server. This means that multiple motion detection data can be transferred to the clients.