Validating AWS Rain Gauge Data from a manual Rain Gauge readings photo's

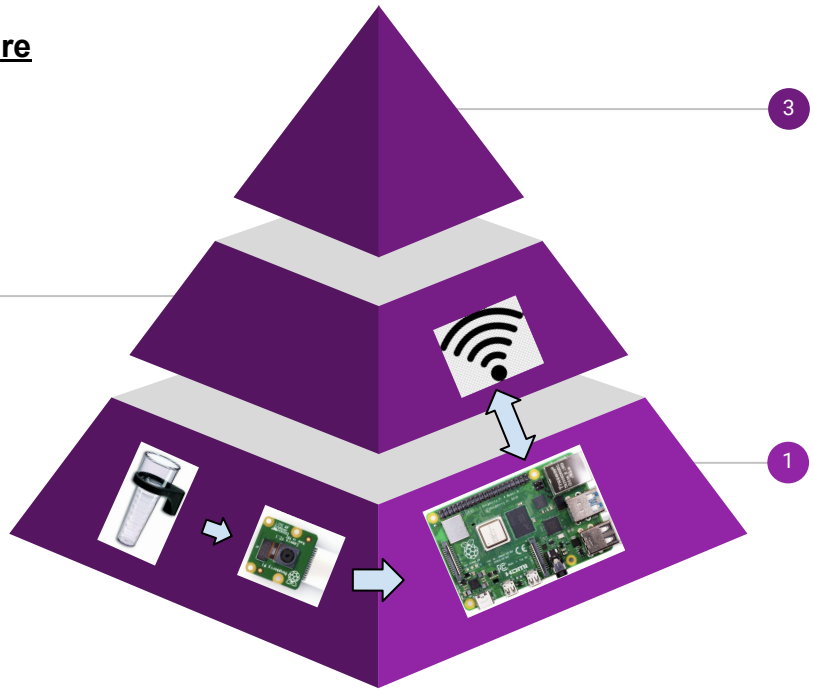
IoT Architecture

Application Layer

The data received from gateway would processed and analyzed here.Application will use some computer vision tech to analyze photos and determine the amount of rainfall.The data could visualize and analysis by researcher.

Network Layer

Using Wi-Fi/4G to receive the photos from Raspberry Pi to edge gateway. Gateway send this received data to cloud using MQTT/HTTPS.

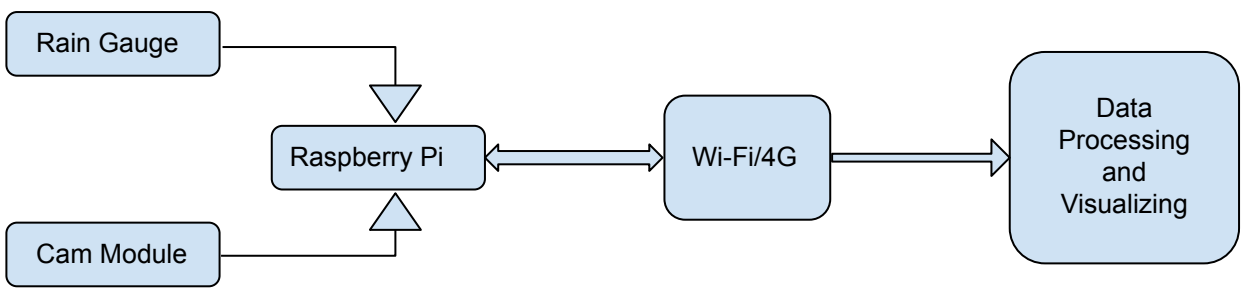


Perception Layer:

Raspberry Pi ,Pi Camera Module and Manual Rain Gauge.

Raspberry Pi is equipped with a camera module that captures the Rain gauge photos and then transmitted to the gateway for further processing.

Block Diagram:



Rain Gauge: Equipment used by meteorologists and hydrologists to gather and measure the amount of liquid precipitation (Rainfall) over a predefined area, over a period of time

Cam Module: a custom designed add-on module for Raspberry Pi hardware.

1. Raspberry Pi captures image of the rain gauge data using the camera module.
2. The image data preprocessed on the raspberry pi to resize/compress the image for transmission.
3. The preprocessed image data is transmitted to the gateway using Wi-Fi.
4. The gateway receives the image data and performs further processing, such as analyzing the image to determine the amount of rainfall in the gauge.
5. The analyzed data compared with the AWS Rain Gauge data and visualizing.