

Report:

We wanted to integrate the ESP32CAM in our project, as a substitute to Webcam. However, we were not able to do that and here are some trials and analysis we made in our research.

To facilitate progress and execute code on the provided ESP32CAM in our IoT project research, access to the web server was essential. This access was granted through the assignment of the web server's IP address. To establish a connection between our Python code and the default web server, we employed various methods.

1. Initially, we utilized the capabilities of OpenCV to access the web server using the `urllib.request` module. However, during the code debugging process, we discovered that the `urllib.response` for the URL requested consistently returned a 404 Not Found error, despite the web server consistently indicating a 200 OK state in the header.
2. Subsequently, we attempted to deploy our own ESP32 web server, but this led to the disruption of camera functionality. Consequently, we reverted to using the built-in web server provided by the ESP32CAM.
3. In another approach, we explored the option of utilizing Google Drive for data storage through Google Cloud's Google Drive API. Although we successfully completed the authentication step, this attempt also failed due to the same underlying issue – the inability to access local web servers over the internet.
4. Faced with limited alternatives, we resorted to retrieving data through the serial port. However, the data received through this method proved to be ambiguous and necessitated the development of a code with specific stoppers. While further exploration of this approach appeared challenging within the given one-week timeframe, a segment of it – specifically, the connection of serial ports and the implementation of LED blinking after verification – has been incorporated into the project.

Analysis:

It was determined that the web server operating on the ESP32Cam functioned as a local server (192.168.X.X). However, it should be noted that local web servers cannot be accessed over the internet.

Lessons learnt:

We learned the basics of the ESP32CAM board, ESP32 and ESP8266. Apart from this, the understanding of pin diagrams and working with code is the new skill which we acquired during the project implementation. It helped us a lot to understand the flow of code and thus helped us in debugging the issues we had, since we clearly had the idea of how the data was flowing within the board.