SECTION XX.
TECHNOLOGIES ET SYSTÈMES D'INFORMATION

DEVELOPMENT OF AN ALGORITHM FOR ESP32-CAM OPERATION IN HTTP SERVER MODE FOR STREAMING VIDEO

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One of the key factors in mobile robots development is the choice and implementation of the control system [1]. Analyzing publications on the development of portable or small-sized mobile robots for solving specialized or point tasks, it was found that many authors use the concept of the Internet of Things (IoT) to implement a control system and computer vision [2]. The works of Azis Isrofi, Shoffin Nahwa Utama and Rishabh Chauhan show a mobile robot control system implementation example based on ESP32-Cam [3,4]. Unfortunately, the authors use an external mobile device with the function of creating a Wi-Fi point to control a mobile robot, which is not always acceptable. The authors LIM, Myung-Jae and Lalu Fatwa Aulia in their research analyze IoT technology algorithms for implementing work with miniature mobile robots [5,6]. But the authors do not show how they implement the control system and operator connection. Based on the analysis carried out in this research, an algorithm for dynamic connection to a mobile robot control system based on ESP32-CAM was developed, it is shown in Figure 1.

A feature of the developed algorithm is the flexibility of connection and independence from the device type, one of the important criteria is the support of a Wi-Fi connection and the presence of any Web browser.

The algorithm for connecting / creating an HTTP server involves the following main stages of the program. It should be noted that this algorithm is inside the void setup () procedure. Therefore, after successfully activating the port connection, the installed camera configurations are launched. The next step is to search for a Wi-Fi point according to the SSID specified in the constant inside the program, if a network with this name is found, it is validated by checking the access password.
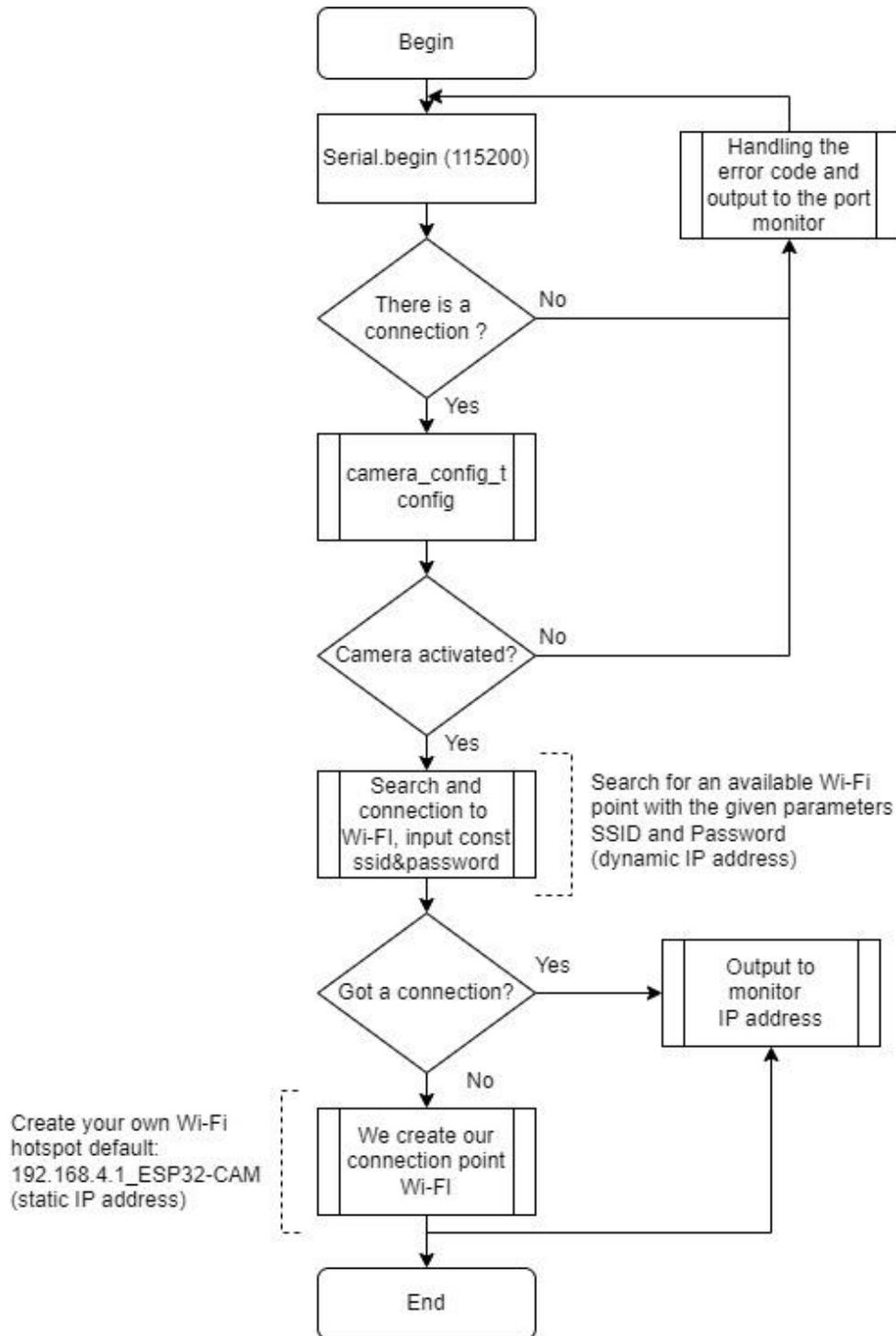
Fig. 1. **Enlarged Algorithm for Connecting/Creating of an HTTP server based on ESP32-CAM**

If the validation is successful, the ESP32-CAM module receives registration in the network in the form of a dynamic IP address, which is displayed to the operator in the port monitor. If it is not possible to connect to the specified point, it is proposed to create and implement the ESP32-CAM module as an access point with the possibility of remote connection to it, for this the operator must connect to the access point with a specialized SSID and enter a password known only to unauthorized access. Upon successful connection / creation of a Wi-Fi point, the algorithm stops working and initializes the HTTP server to implement the control system.

Conclusions: The developed enlarged algorithm for connecting / creating an HTTP server based on ESP32-CAM will allow to develop flexible mechanisms for connecting a control system, depending on the need, and will also ensure reliable connection using authentication functions.

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