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An Effective and Efficient Web Platform for Monitoring, Control, and Management of Drones Supported by a Microservices Approach

Authors : Jorge R. Santos, Pedro Sebastiao

Abstract : In recent years there has been a great growth in the use of drones, being used in several areas such as security, agriculture, or research. The existence of some systems that allow the remote control of drones is a reality; however, these systems are quite simple and directed to specific functionality. This paper proposes the development of a web platform made in Vue.js and Node.js to control, manage, and monitor drones in real time. Using a microservice architecture, the proposed project will be able to integrate algorithms that allow the optimization of processes. Communication with remote devices is suggested via HTTP through 3G, 4G, and 5G networks and can be done in real time or by scheduling routes. This paper addresses the case of forest fires as one of the services that could be included in a system similar to the one presented. The results obtained with the elaboration of this project were a success. The communication between the web platform and drones allowed its remote control and monitoring. The incorporation of the fire detection algorithm in the platform proved possible a real time analysis of the images captured by the drone without human intervention. The proposed system has proved to be an asset to the use of drones in fire detection. The architecture of the application developed allows other algorithms to be implemented, obtaining a more complex application with clear expansion.

Keywords : drone control, microservices, node.js, unmanned aerial vehicles, vue.js
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