

RESEARCH OF THE MULTISPECTRAL IMAGING ANALYSIS SYSTEM BASED ON RASPBERRY PI

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Systems on a chip (SoC) are electronic devices that hold the functional components of an entire device (such as a computer) on a single chip. Due to their compact form factor and relatively low energy consumption, these devices have become widely used by developers and enthusiasts in many applications.

The Raspberry Pi is one of the world's most common families of single-board computers. A wide range of peripherals and external modules, combined with the presence of built-in network functions, allows us to consider the Raspberry Pi as a basis for building models of complex computer systems, such as remote sensing systems (RSS) [1]. The proposed field of application is feasible due to the possibility of using an external hardware module of the multispectral camera. The analysis of multispectral images is offered to carry out with use of model of machine learning which can be trained in advance on a powerful workstation with use of input datasets [2]. To implement the proposed project, a Raspberry Pi 4 Model B board was selected [3].

The purpose of the report is to study and build a model of intelligent multispectral images analysis system based on a Raspberry Pi SoC for control and detection of burned areas [4].

The report compares the selected system on the chip with available counterparts, considers available to the end user modules of multispectral sensors, justifies the choice of hardware and software for use in the system development. The emulation of multispectral remote sensing data reception to the system is conducted, the results and efficiency of calculations by the proposed system are analyzed. The given data show expediency of use of the offered system, and portability of this solution allows to consider its use as the built-in module of unmanned aerial vehicles.

References

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