

MULTISPECTRAL IMAGES PROCESSING USING SYSTEMS ON CHIPS

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Nowadays, thanks to the rapid development of aerospace research programs, the use of multispectral images has become widespread and has found practical application in many areas, such as weather forecasting, environmental monitoring (monitoring state of water, soils, forests, etc.) and even military activities. In the vast majority of cases, the analysis of multispectral images by visual method is almost impossible, so the data obtained from observations must be classified using various algorithms and methods of machine learning [1, 2]. The training of an artificial intelligence model regardless the chosen methods usually requires significant power consumption, hardware costs and computing power, but the actual use of the resulting model can be considered on more budget computers, even such as systems on chips [3].

The purpose of the report is to research and develop a model of a system for multispectral images processing using an integrated circuit also known as a system on chip (SoC). The developed model has practical application in the field of burned areas monitoring and detection [4].

The report presents the results of the study of technical and economic feasibility of using systems on chips in the multispectral image processing field, as well as a general analysis and comparison of the proposed system architecture with other common analogues. Aspects such as energy efficiency of using different types of systems, the possibility of autonomous operation, as well as the integration of data analysis systems with global networks are compared. Analysis results of investigated problem show that due to the fact that modern systems on the chip are available to the end user and provide opportunities such as data multiprocessing and connection of peripherals, they are suitable for deployment of functional models of multispectral data processing.

References

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