

Simple Communication Interface for a Radar Detector in the Moments Space

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Abstract

The method of Radar Target Detection by Analysis and Statistical Classification of the Cellular Emission (DRACEC) can be functionally divided into three fundamental stages: Acquisition, Adaptation, and Detection. During Acquisition it is required to continuously exchange information between the hardware in FPGA and the software, without affecting the performance of the latter. This paper proposes the simplest communication interface that satisfies these requirements when DRACEC is applied to a small searching window. The solution is implemented on the serial port and ensures that samples stored in FPGA are available at the computer for the remaining processing stages. One fundamental characteristic of the proposal is a protocol designed to control the communication flow, which is implemented through a dedicated program thread. This allows software performance to not deteriorate during communication and lays the foundations for using multithreading techniques to develop the stages of DRACEC.

Keywords: DRACEC method, radar, communication interface, UART

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