Implementation of Euclidean Algorithm Based on Embedded System

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ABSTRACT

Based on consideration for data security and confidential communication, information is constantly encoded on transmission. The noise interference and data loss are hardly avoided on transmission. Therefore, dealing with data error and loss is the main goal of error control coding. The simplified Euclidean algorithm of Reed-Solomon codes, which would correct data errors and erasures, is realized with an embedded system in this thesis. In the process of verification, the simplified Euclidean algorithm is firstly down loaded into the embedded system. Then, a friendly interface is made with a computer program of BCB, which provides functions such as display of images and input of image data, random noise interference, and data erasure. After image data have been suffered from interference and erasure artificially, they are passed to the embedded system via RS 232 transmission line. When error and erasure corrections have completed in this embedded system, these image data are sent back and displayed on this BCB interface, which shows differences between these two images. From this verification, this implementation of simplified Euclidean algorithm is successfully achieved

Keywords : RS code ; Euclidean algorithm ; Error control coding ; Embedded system

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