CMP-8

XOR Operation and Rice Codes Based Two-Stage Method for Lossless Telemetry Data Compression

Rewase Ramses Ragei, Sherif Ashraf Refaat, Mohamed Abdelmounged Shouaib
Military Technical College, Egypt, rewaeselmaraghy@yahoo.com, sherifashref52@yahoo.com, ahmedseedak@yahoo.com

Supervisor: Mohamed Abdelmoneim Taha Elshafey, PhD – Computer Engineering
Military Technical College, Egypt, elshafey.m@gmail.com

The article presents results of a study of a proposed lossless compression method for telemetry data. A two stage scheme of lossless compression, consisting of decorrelation and entropy coding, is presented. In experiments a bitwise XOR operation is implemented as a decorrelator and Rice coding method as entropy coder. A comparison is performed between two compression methods: one is based only on Rice coding method, while the other is based on the proposed method. The results are based on estimates of the gain in variance and entropy of the output signal from the decorrelator. In experiments, parameters of telemetry information of automatic control systems are studied, such as temperature, pressure and positioning data. Streams of telemetry frames, with different frame structures: one and two level of commutation, in IRIG-106 standard format, are formed and tested. Based on experimental results conclusions are done for lossless telemetry data compression.