Integrating Hardware-Error-Tolerance-Mechanisms in Safety-Critical Systems

Motivation

Memory cells in embedded systems can transiently or permanently be disrupted by cosmic radiation. This is a very critical factor within aerospace applications. Not even on earth's surface can we exclude such effects and thus must take them into account when developing safety-critical applications. In this thesis, you will enhance an existing application to mechanisms for detecting and (where possible) tolerating hardware errors. This will be implemented on a microcontroller and an FPGA. Finally, you have to analyze and compare the possibilities of these enhancements and emerging interactions with the original functionality.

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