Abstract

This thesis is an operational comparison of different implementations of the LMS algorithm. This algorithm is a significant achievement in the era of digital signal processing as it is suitable for parameter estimation (identification) of systems and thus for noise canceling. Countless variants are available, each with different benefits.

Due to its popularity and versatility, it has a vast number of implementations, and I have implemented it on ARM Cortex-M3 architecture within this thesis. The function family that is the basis of the comparison was created by ARM.

During the development phase I got acquainted with a microcontroller series based on this architecture, and using this knowledge I have built a software framework, in which I could later implement the LMS and compare it with the optimal solutions of ARM. I have made sure that the processor would be waiting as occasionally as possible and have made the calculations the simplest I possibly could.

The final goal was to compare the performance of the two implementations, which revealed that the runtime of the my algorithm was approximately the same as that of the ARM.