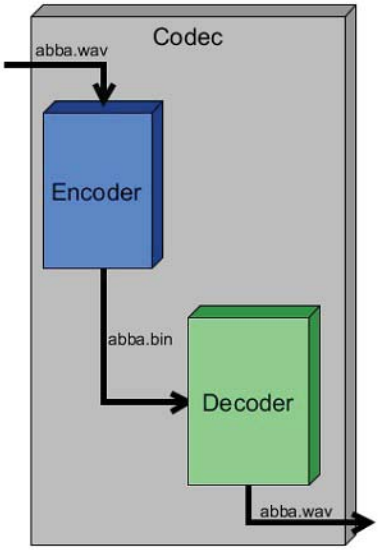


Audio Codec implementation for Bluetooth Low Energy devices

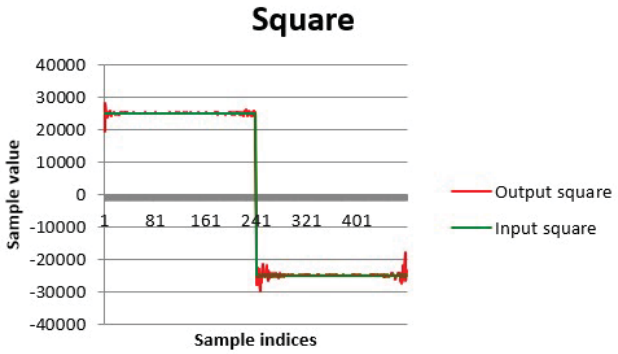
Graduate Mottiez Gilles

Objectives

The goal is to implement part of an audio codec, for Bluetooth Low Energy devices. The quality and speed of the implementation must be characterized by tests.

Methods | Experiences | Results

After reading and understanding the Specification document of the codec, the hardware has been selected. The code is written in C, and the tests are performed with Python scripts.
First, the architecture has been designed with UML diagrams. It must be user friendly. Then the architecture has been implemented and validated. Afterwards, the algorithm itself has been implemented, following the equations of the Specification document.
The implementation was verified with the test vectors provided in the Specification document, and later with audio files from the Test Specification document. Square signals were used to debug the code.
Speed measures and optimizations have been done, which made it faster.
The results are average. The encoder works correctly in its non-optimized version, it is in conformity with the requirements. The decoder produces noisy soundtracks. Even though it is still recognizable, it is not in conformity. Due to a lack of time, the codec is not running real time, more optimizations would be needed.



Plot of a square signal in green, and the encoded - decoded signal in red.

Bachelor's Thesis
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Degree programme
Systems engineering

Field of application
Infotronics

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