

## **Abstract**

The need to write melodies down is presumably as old as the existence of melodies. Sheet music is a musical signal system used by composers to describe musical compositions. A musician needs to be able to interpret the notes of a sheet music in order to play the music on his instrument. A singer who sings the lyrics with the melody so described can also interpret the recorded score. The use of sheet music helps keep the music intact. That is why the purpose of my thesis was to create a software that will help to record different melodies.

During my thesis I got acquainted with the steps of digital signal processing, including audio signal processing, and developed an algorithm suitable for creating sheet music based on one or two- part melodies.

Basically, we need to know two parameters before we can write a note: the temporal position of the notes and the pitch of the note. For the former, it is worth examining the various audio signals in the time domain and for the latter in the frequency domain. Logically, this means that the task has to be divided into two major parts.

In the course of the literature research, I studied existing tempo and pitch recognition methods. I tried to develop my own algorithm using these. During the design process I tried several methods and compared them to find the best possible solution to different problems.

MATLAB was used to compare different methods. With the help of pre-recorded music recordings, I examined the efficiency of the algorithms, observing the accuracy and the completion time. I implemented the best solution in MATLAB as well. I used an external program called LilyBin to graphically represent the sheet music . The algorithm itself generates a code from an audio file that, when copied directly to the input of LilyBin, creates the desired sheet music.

Finally, I tested the program and compared it with a similar application available on the market. As a conclusion of the thesis, I evaluated the software produced and also explored further possibilities of further development.