

Abstract

Software defined instrumentation holds the advantage of the digital approach, that multiple applications can be implemented by using only one hardware. Thus, with one universal device, many measurement instruments can be realized with freely chosen functions, to replace the conventional measurement instrumentation.

In my thesis work the programming paradigm and basic elements of creating a virtual instrument will be introduced. I will inspect the method of controlling an instrument by software applying a data acquisition (DAQ) device and an oscilloscope. Later, the capabilities of the aforementioned DAQ device in the aspects of signal generation and analysis, together with the problems of sampling will be examined. It will be turn out, that the signal generation is problematic over a certain frequency range, so in order to overcome this a filter circuit will be applied. Finally, as a demonstration of the vast number of opportunities, a unique function, which can determine the transfer characteristics of the previously built filter will be implemented.