



Master thesis.

Advance signal analysis Matlab GUI

Description

Matlab is a powerful tool commonly used to process and analyze digital signals offline. It offers, for that purpose, the possibility to either use its already built-in functions or program your own signal processing algorithms. It is also capable of plotting data and results into fully configurable and meaningful graphs. However, all this is offered in a command line interface. The process to analyze digital signals tends to be repetitive since it is based on using the same algorithms and plotting the same kind of graphs for different input signals.

The student would need to create a digital signal analysis Graphical User Interface (GUI) in Matlab environment that allows the user to analyze data in a consistent manner and to focus on the analysis rather than on the processing methods. The digital signal processing methods will be given and/or described to the student. The GUI shall be also capable of selecting the section of the data that needs to be processed and to compare different sections of processed data.

This Mater thesis is proposed by the company Nexteer Automotive Germany, who will support and supervise it. It might be needed to work for this project in Rüsselsheim (Germany) for a period between 1 to 3 months. Travel expenses for this need would be covered by the company. Note that the thesis book shall be written in English language.

Objectives

The objective of this thesis is to create a Matlab GUI capable of:

- Importing and recognizing data stored as plain text in different file formats.
- Selecting the exact part of the data that is desired to be analyzed.
- Processing the selected data using common and advance digital signal processing methods.
- Plotting in a meaningful way the processed data.
- Comparing different sets of processed data.

Required skills

- Digital signal processing
- Matlab language
- Fluent English (written and spoken)
- Travelling availability (Optional)

Benefits/Added values

- Monthly allowance
- Direct contact with the industrial world
- International team work experience
- Insights into the automotive electronics
- Travel costs covered