

**TECHNICAL UNIVERSITY OF KOŠICE**  
**FACULTY OF ELECTRICAL ENGINEERING AND INFORMATICS**

Analysis of non-auditory effects on contextual plasticity  
in spatial hearing  
Master thesis

**Appendix B**  
**User Guide**

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## 1 Purpose of software application

The entire software application consists from several executable scripts (.m files), which purpose is to perform different data analyses and visualizations, in order to get valuable scientific outputs, usually in the form of various graphs for evaluation of our hypotheses and gain general insight into an effect of non-auditory factors on contextual plasticity in spatial hearing.

Specifically, the following analysis were performed:

- bias analysis of responses
- temporal profile analysis
- analysis of correlation coefficients
- analysis of standard deviations.

## 2 Inventory of delivered files

The parts of appendix A (CD) are:

- the scripts (.m files) for running the mentioned analyses with data
- input files (.mat files)
- user guide in electronic format
- system handbook in electronic form

All scripts for analyses are in folder “Analyses”, which is divided into two subfolders for each experiment: “Experiment A” and “Experiment B”. Both subfolders contains another folders, which are called based on the type of analysis: „Bias analysis”, “Temporal profile analysis”, “CC analysis”, “STD analysis”. These folders contains executable scripts (.m files) and data (.mat files).

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## **3 Installation of software application**

### **3.1 Technical requirements**

The PC with system requirements for running MATLAB. Otherwise, no specific technical requirements are necessary.

### **3.2 System requirements**

The system requirements for MATLAB running are following [1]:

- Microsoft Windows XP, Vista, 7 or 8
- 1 GHz or faster processor
- 2 GB RAM
- 10 GB free hard disk space

### **3.3 Installation**

The installation is not needed. However, a user has to copy the folder “Analyses” with all files and subfolders and set the correct path of copied folder in MATLAB environment.

### **3.4 Description of structure of software application**

The detailed description of scripts and their purposes is in System Handbook, section 3: Description of software application.

Generally, the scripts consists of these sections:

- selection of subjects included in analysis
- loading of input files
- algorithm of specific analysis
- output in the form of figures

### **3.5 Description of system errors**

The system errors should not occur. However, if any occurs, it will be necessary to study description of error in MATLAB.

## **4 Use of software application**

To run a script a user needs to push the button F5 or click on the button “Run”.

### **4.1 Description of dialog with user**

The user interact with MATLAB via Command Window. As was mentioned it is necessary to set correct path of folder with scripts and data and after that write a name of script to run.

## **5 Description of input and output files**

The input files, which are necessary for data analysis are saved as .mat files and contains all information about experiments including responses of subjects. The output files are usually in the form of figures, which can be saved in various graphics file formats by user. All input are attached in a folder with script. The detailed description of input files is in System Handbook, section 4: Description of input and output files.

## **6 Assessment of solution**

The developed scripts met the requirements for performing different analyses to explore influence of non-auditory factors on contextual plasticity in special hearing.

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## Bibliography

- [1] MathWorks: MATLAB The Language of Technical Computing: System Requirements, [cit.: 2014-4-23], Available at: [\[http://www.mathworks.com/support/sysreq/current\\_release/](http://www.mathworks.com/support/sysreq/current_release/)