TECHNISCHE UNIVERSITÄT DRESDEN

Introduction to Matlab

Intro

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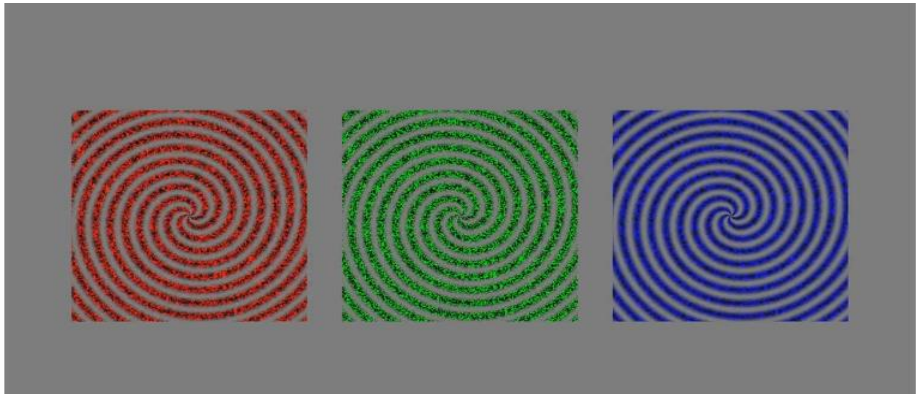
DRESDEN concept
Exzellenz aus Wissenschaft und Kultur

MATLAB in Psychology



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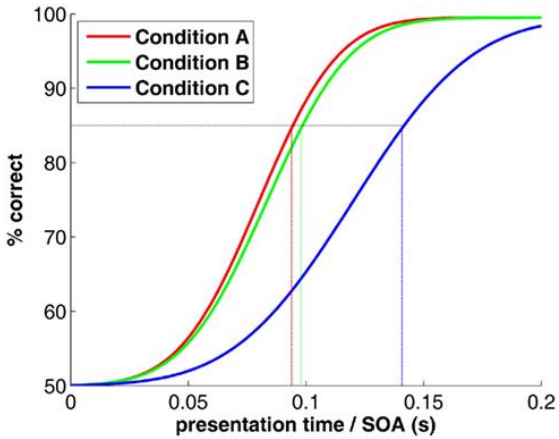
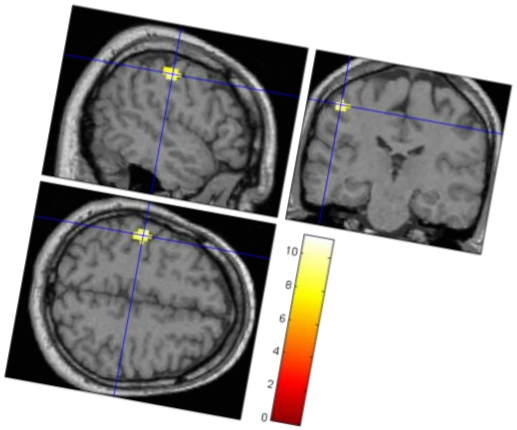


VanRullen (2011)



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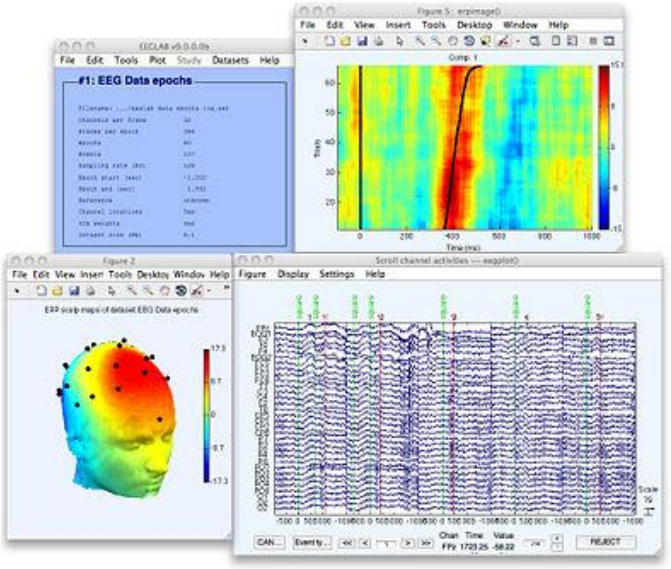

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MATLAB in Psychology

Pros:

- High-performance numerical computation, data analysis, visualization capabilities.
- Advanced editor and command-line features: You can write statements in MATLAB and have them calculate immediately so they are tested as you go.
- A very large and fast growing database of built-in programs and toolboxes for almost every scientific application:
  - Statistics and Machine Learning Toolboxes
  - Specialized Neuroscience Applications: SPM, EEGLAB, Psychtoolbox, …
  - Image Processing
- Thousands of fundamental and specialty function written by experts are available.
- **Cons:**
  - It’s rather expensive
  - (for the expert) Many built-in programs and toolboxes are not open-source.

Preliminary seminar overview

Date	Topics	Exercise/Project
14.10	Kick-off presentation	
21.10	Intro, basic operations	In-class exercise
	Data Handling: vectors, matrices, variables	
4.11	Basic and advanced plotting	In-class exercise
	Scripts and functions	
18.11	Control Flow statements	In-class exercise
	Debugging and integration	
9.12	Data analysis and statistics	In-class exercise Project Distribution
	Sound, images and videos	
20.01	Experimental stimuli and GUI	In-class exercise Project Deadline
	Project Presentation	

Textbook and Additional Resources

- **MATLAB for Psychologists (2012),** Borgo, M., Soranzo, A., Grassi, M., Springer-Verlag, 2012, ISBN. 978-1-4614-2196-2.
  - Available in SLUB as hard copy but not as electronic version

- **MATLAB for Neuroscientists, 2nd Ed: An Introduction to Scientific Computing (2014),** *Wallisch, P., Lusignan, M.E., Benayoun, M.D., Baker, T.I., Dickey, A.S. and Hatsopoulos, N.G.,* Academic Press, ISBN. 978-0123838360.

- **Matlab, 3rd ed: A Practical Introduction to Programming and Problem Solving (2013),** Attaway, S., Butterworth-Heinemann, ISBN. 978-0124058767.

  - Available in SLUB as hard copy and online (on Elsevier Sciencedirect website) as an e-book.

- Additional Resources (Tutorial, codes, videos, etc.) can be shared on the course website.

Grading Policy

- **Final Grade: Pass/ Fail**
  - The pass/fail will depend on the project presentations on the final session
- Late submissions:
  - Extensions are generally not possible for the projects
- Exercise presentations:
  - Three randomly selected teams will present their project work.

Team-work

- **Team-work is highly recommended**

- During seminar: One or two participants per computer
- Project: Everyone on their own

- Plagiarism policy:
  - Discussing solutions is **OK**
  - Getting ideas by going through codes shared by others or from other resources is **OK**
  - It is **not recommended** to post your solutions by email
  - **Copying-and-pasting** any part of written code from anywhere is **NOT OK**!

Course Website and email contact

- **Course Website:**
  - https://tu-dresden.de/mn/psychologie/ni/studium/winter-semester-2016-2017/kn-matlab-course
- **Contact:**
  - **Pouyan R. Fard** pouyan.fard@tu-dresden.de