TECHNISCHE UNIVERSITÄT DRESDEN

# Introduction to Matlab

## Intro

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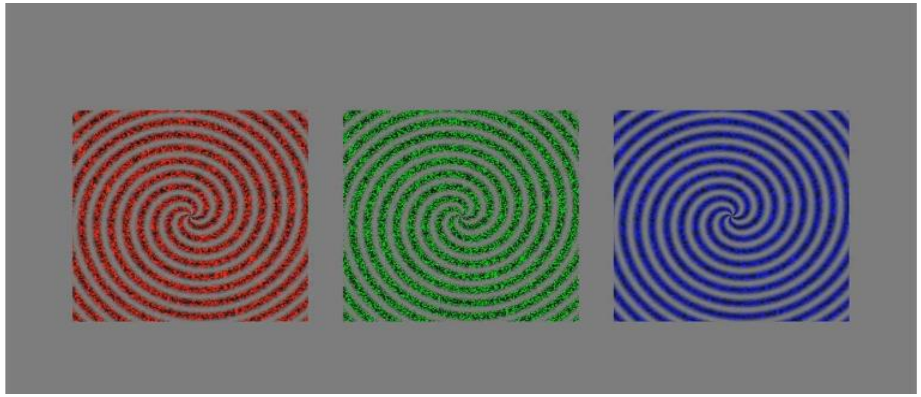
Prof. Dr. Stefan Kiebel

Dresden, 06.04.2017

DRESDEN concept
Exzellenz aus Wissenschaft und Kultur

# MATLAB in Psychology



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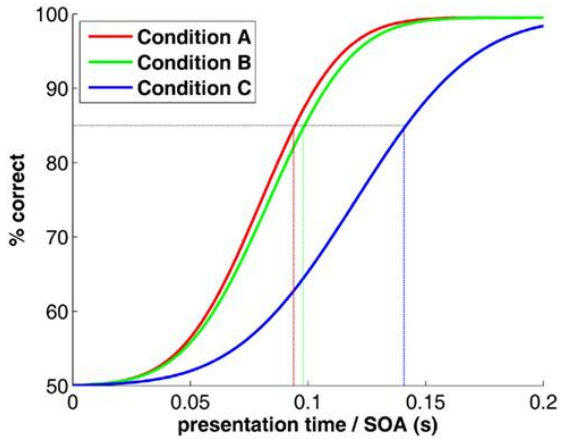
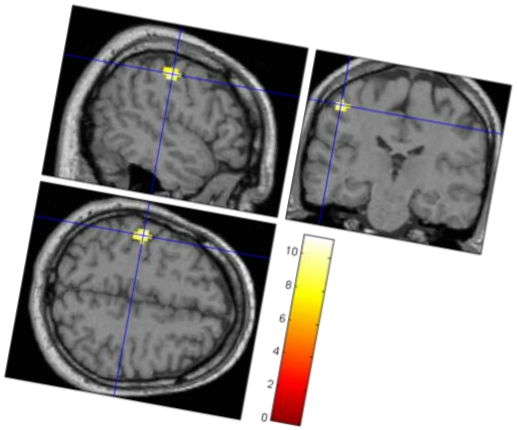



VanRullen (2011)



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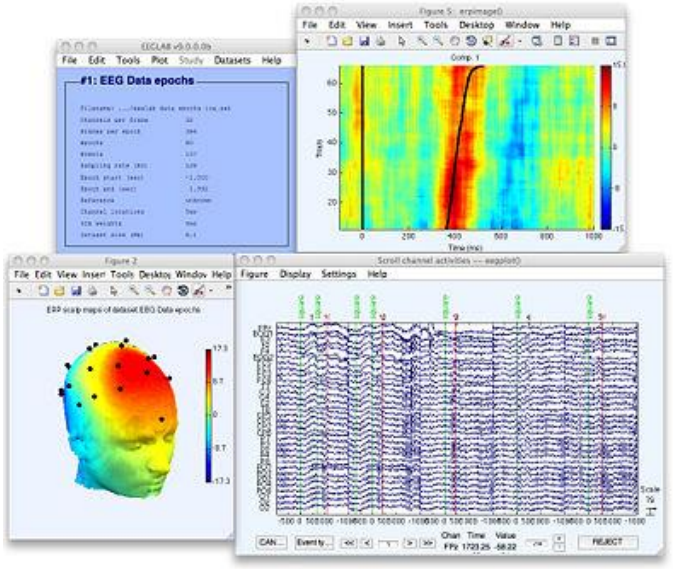


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# MATLAB in Psychology

**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.

# Seminar overview

| Date | Topics | Projects |
|---|---|---|
| 06.04. | Intro, basic operations, First Exercise (Morse Code) | |
| 13.04. | First Exercise Continued (Morse Code) | |
| 20.04. | Second Exercise (Game of Life) | |
| 27.04. | Second Exercise Continued (Game of Life) | |
| 04.05. | Third Exercise (Drift-Diffusion Model) | Project Distribution |
| 11.05. | Third Exercise Continued (Drift-Diffusion Model) | |
| 30.05. | - | Project Deadline (6 PM) |

# 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:**
  - One graded project
  - In-class exercises: Not Graded
- **Prüfungsleistung regulations**
- Late submissions:
  - Extensions are generally not possible for the project

# Team-work during the seminar

- **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**
  - **Copying-and-pasting** any part of written code from anywhere is **NOT OK**!

# Course Website and email contact

- **Course Website:**
  - Shortened Hyperlink: https://goo.gl/OQMZrM
- **Contact:**
  - **Pouyan R. Fard** pouyan.fard@tu-dresden.de