

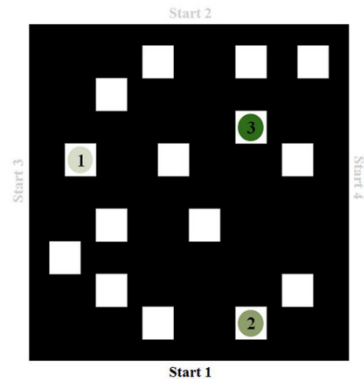


*Student project in Visual Cognition*

**Manipulation of i) the memorandum, ii) the reference frame & iii) the scaling due to working memory representations in CORSI tasks.**

**Background.** A classical (experimental & diagnostic) paradigm to assess the (visuo)-spatial working memory (WM) is the CORSI (block tapping) task (Corsi, 1972), where subjects have to initially memorize (encode) and subsequently recall sequences (varying in lengths) of spatial locations (Vandierendonck et al., 2004).

In this project, using a digital version of the CORSI task, several manipulations due to the built spatial WM representations should be tested to increase the knowledge regarding the robustness of the spatial memorandum towards i) the kind of recall information needed (sequence order vs. position), ii) the reference frame (Röser et al., 2016), and iii) the scalability of the spatial-temporal sequence.



**Project(s).**

- Develop and program experimental setups (psychophysically) by using MatLab technology and the Psychophysics Toolbox Version 3 (PTB-3).
- Learn to use psychophysics and a (visuo)-spatial memory task to investigate and manipulate the CORSI-span (as a measure of spatial WM performance).
- Learn to create and to run psychophysical experiments as well as data processing by the use of MatLab.
- Analyze behavioural data empirically (i.e. estimate of WM capacity) and graphically and perform statistical tests to extract meaningful effects.

**Methods.** Visual psychophysics, statistics, and MatLab programming of the experiments and the scripts for analysis.

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**Level.** The project is planned as BSc-project but can be easily extended to a MSc-project.

**References.**

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- Avons, S.E. (2007). Spatial span under translation: A study of reference frames. *Memory & cognition*, 35(3), 402-417.
- Bernardis, P., & Shallice, T. (2011). Frames of reference in spatial span. *The Quarterly Journal of Experimental Psychology*, 64(12), 2438-2454.
- Röser, A., Hardieß, G., & Mallot, H.A. (2016). Modality dependence and intermodal transfer in the Corsi Spatial Sequence Task: Screen vs. Floor. *Experimental brain research*, 234(7), 1849-1862.

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