



*Student project in Visual Perception*

## **Relevance of memory-guided saccades in gaze compensation of hemianopic patients**

**Background.** Movements of eye and head (i.e., gaze) together with attentional shifts are a key element of visual behaviour in complex environments. Patterns of gaze shifts should depend on a number of factors, including the size and layout of the visual field, central visual processing capacities, short-term and long-term memory, and specific task demands. Studies with patients suffering from visual field deficits (i.e., homonymous hemianopia) are instrumental in assessing the gaze strategies and their adaptation to reduced information intake and maybe reduced processing capacities. As compared to healthy subjects, patients' strategies may differ with respect to scanpath pattern on the one hand and memory involvement on the other, leading to various levels of functional compensation.

In an earlier study, hemianopic patients were assessed within an experimental toolbox due to their abilities of compensating functionally the visual field loss. In one of the toolbox experiments, an intersection crash-avoidance task, gaze patterns of patients and healthy subjects were measured and their task performance (i.e., crash rate) was analysed. In a later analysis we noticed an obvious and novel gaze pattern on the side of the hemianopic patient. This pattern was assumed to be driven by spatial coordinates from memory, i.e., memory-guided saccades.

### **Project(s).**

- Analyse gaze movement patterns of hemianopic patients and healthy subjects (recorded previously) in order to identify and assess the role of memory guided saccades in obstacle avoidance.
- Analyze behavioural data empirically and graphically and perform statistical tests to extract meaningful effects.

**Methods.** Visual psychophysics, MalLab programming of the scripts for analysis, Eye Tracking (possibly), and statistics.

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### **References.**

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