MNN Seminar November 13th 2019 @ 12:15

Media & Knowledge Sciences (MAKS) Room 414

What eye movements can tell us about the brain

Prof. Sunčica Zdravković
University of Novi Sad, Serbia/Department of Cognitive Science, UM.

The potential of using eye movements to study brain and behaviour was first noticed in the late nineteenth century in relation to reading. However, the first fundamentally important theoretical insights came from the work of Yarbus in the 1950s. He made the connection between eye movements and attention, finding that behaviour could be modified through experimental instructions. In the 1970s research was mostly focused on reading, but in the 1980s it was expanded to a much broader range of cognitive tasks. Eye movements not only inform us about normal cognitive function (e.g., perception, attention, language, object recognition) but can also provide early indications of abnormal states, since a variety of features can be recorded with modern eye trackers. In the last two decades, the development of eye tracking technology has also enabled wider usage in applied fields such as advertising, design, and human-computer interaction.

My research is focused on visual perception and I will demonstrate the use of eye tracking data on specific two problems: face perception and the perception of colour in dynamic scenes. Our research shows that eye movements can be directly influenced to avoid regions with shadows, and to sample more often from the areas with higher contrast. Also, dynamic scenes and non-uniform light fields are particularly challenging for our visual system. However, eye movements in such scenarios adapt to predictable trajectories that can be used to improve color constancy.