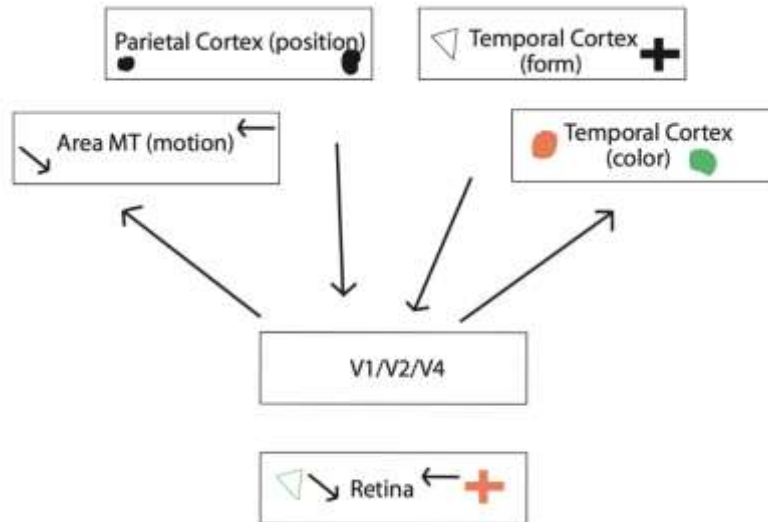


Café Scientifique Headingley

Monday 14th October 2024

Vision as an Active Process: the Role of Object-based Attention.

By: Marc de Kamps



Outline: Artificial Neural Networks (ANNs) have become quite proficient at recognition tasks. They are built in most automatic surveillance tools that are used for recognition and are widely used in medical imaging tasks, for example to detect anomalous tissue. They are also quite brittle and sometimes produce absurd results. Although they have been inspired by how human vision works, they leave out important functions that use prior knowledge and expectations about what will be in the image. Biological vision is now understood to consist of at least two flows of information: first, bottom-up stimulus processing which converts raw visual information into representations that are used by higher brain areas and that appear to represent the essence of a visual scene. Second, activation emanating from higher cortical areas influencing and modulating the visual stimulus information by means of mechanisms which are collectively called attention. ANNs generally only emulate the bottom-up process. It is a natural question to ask whether attention mechanisms can improve ANNs. We address this question in the context of tumour recognition in digital histopathology images and the answer seems to be affirmative: attention can lead to an improved processing of images. In this talk, I will provide a non-technical introduction to ideas about object-based attention, its role in visual cortex and how these ideas can influence image processing.

Speaker: Marc de Kamps is an Associate Professor in the School of Computing at the University of Leeds. Before coming to Leeds he trained as a physicist, worked as a postdoc in the psychology department of Leiden University and the chair for robotics and embedded systems at the TU Munich. He was involved as principal investigator in the Human Brain Project. His research is about neural models of cognition, image processing and increasingly about statistics.

Venue: The New Headingley Club, 56 St Michaels Road, LS6 3BG

Time: Room opens 7:30pm, Talk begins promptly at 7:45pm

Entry: Donation please for room hire and expenses: £4 at the door



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