

Brain and Mind – from Concrete to Abstract

»SOUND AND THE BRAIN« FEBRUARY 6TH 2024

AN INTERDISCIPLINARY WORKSHOP BETWEEN MSH AND
ST HILDA'S COLLEGE OXFORD UNIVERSITY

Dr. Andrew King

»How the Brain makes Sense of Sound«

Our ability to hear provides us with an incredibly rich source of information about the world around us and, through language and music, plays a hugely important role in human communication. The tiny disturbances in air molecules that constitute sound are detected by the ear and converted into a form that the brain can understand. The events that unfold in the brain enable us to recognise someone's voice or a piece of music, to determine the direction from which it came, and to separate particular sounds from the many others that may be present at the same time. One of the most important properties of the brain – which is the focus of this talk – is its capacity to change the way in which sensory signals are processed over multiple timescales.

Andrew King is a Wellcome Principal Research Fellow and Professor of Neurophysiology at the University of Oxford. He studied physiology at King's College London and obtained his PhD from the National Institute for Medical Research. His research uses a combination of experimental and computational approaches to investigate how the auditory brain adapts to the rapidly changing statistics that characterize real-life soundscapes, integrates other sensory and motor-related signals, and learns to compensate for the altered inputs resulting from hearing impairments.

TIMETABLE

18:00 Uhr

Introduction

18:10 Uhr

»How the Brain makes Sense of Sound«

Dr Andrew King,
University of Oxford

18:30 Uhr

»Auditory Perception and Patterns«

Dr Ifat Yasin,
University College London

18:50 Uhr

Discussion and break

19:30 Uhr

»A Puzzle About What We Hear«

Dr Matthew Nudds,
Warwick University

19:45 Uhr

Discussion

20:00 Uhr

End of Workshop

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Dr Ifat Yasin

»Auditory Perception and Patterns«

We are inherently good at following a conversation of interest in a multi-talker environment or a melody line in an orchestra. In any given situation, sound elements can be organised perceptually to optimise detection and recognition. This allows us to make sense of our complex and constantly evolving auditory environments. What are the principles that govern such organisation, and how does attention and prior knowledge play a role in such a process? In his lecture Dr Ifat Yasin provides an overview of some of the processes involved with some audio demonstrations, and shows how attention and prior knowledge play an important role in shaping our immediate psychological experiences as well as shaping the development of future audio technologies.

Ifat Yasin is Professor of Auditory Perception and Audio Technologies at the University College London (UCL) Department of Computer Science and has a background in auditory perception, auditory assessments, and audio applications, combining fields of Psychology, Physiology, Computing, and Physics. Current projects involve understanding how the brain perceives, and can be primed to perceive patterns in sound, improving speech recognition in noisy backgrounds, and modelling human auditory sensation, with applications to accessible audio technologies, and audio ecological monitoring.

Dr Matthew Nudds

»A Puzzle About What We Hear«

What do we hear? A plausible answer is that we hear ordinary things - dogs barking, clocks ticking, doors slamming, and so on. These things - dogs, clocks, doors - are the same sorts of things that we can see and touch. I then set out a simple argument to the conclusion that this is wrong, that we can't hear these things: we only hear the sounds they make. But the view that we only hear sounds, although very widely held, is mistaken, and I end by looking at where the simple argument has gone wrong. What's at stake here is the question of what is fundamental for an account of hearing - to explain how we hear sounds, or to explain how we hear ordinary things.

Matt Nudds is a professor in the philosophy department at Warwick University. He is interested in perception, particularly the non-visual senses and is currently writing a book on auditory perception.

Future Brain & Mind events:

»Touch and the Brain« on Tuesday, 7th May 2024

