Wahrnehmung - A Public Outreach Event

Event:

The goal of this event is to raise awareness about the nature of visual perception amongst the residents of the city of Kaiserslautern. Leading scientists from four different countries will introduce interested listeners to the fascinating workings of the human mind and brain during the seemingly automatic process of “seeing”. They will also discuss the processes involved in learning to “see”, and “seeing” in population with visual disorders (e.g. Amblyopia or lazy eyes) and mental disorders (e.g. Schizophrenia).

Time:

23rd August 2013 (Friday) from 15:00 to 18:30

Where:

Building 42, Room 110, University of Kaiserslautern, Kaiserslautern, Germany.

Contact:

Prof. Dr Tandra Ghose <ghose@sowi.uni-kl.de>

Language:

Talks will be in English

Website:

http://www.sowi.uni-kl.de/psychology-of-perception/events/

Acknowledgements:

- EU’s Marie Curie Career Integration grant (P#293901) for funding this event.
Description of event for August 23, 2013 – an initiative of Prof. Dr. Tandra Ghose

Schedule:

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<td>15:05 to 15:15</td>
<td><strong>Introduction</strong> by Prof. Dr. Tandra Ghose (University of Kaiserslautern)</td>
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<td>15:15 to 15:45</td>
<td>“<strong>The Continuity of Mind</strong>” by Prof. Dr. Michael Spivey (USA)</td>
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<td>15:45 to 16:15</td>
<td>“<strong>How the Conscious Mind Constitutes itself through Perceptual Learning</strong>” by Prof. Dr. Michael Herzog (Switzerland)</td>
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<td>16:30 to 17:00</td>
<td>“<strong>Perceptual Learning and its Applications</strong>” by Prof. Dr. Philip Kellman (USA)</td>
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<td>17:00 to 17:30</td>
<td>“<strong>Visual Disorders (e.g. Amblyopia/Lazy Eyes) and Perceptual Learning</strong>” by Prof. Dr. Cong Yu (China)</td>
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<td>17:30 to 18:00</td>
<td>“<strong>Schizophrenia and Time: a Disrupted Vision of the World</strong>” by Prof. Dr. Anne Giersch (France)</td>
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The Continuity of Mind & Perceptual Learning

The mind-body problem has intrigued us for many centuries. In this talk series the speakers will provide a perspective on mental life and how the mind/brain interprets the world, the processes involved in learning about the environment, and ecological approaches to this problem. Further topics will include how the principles learnt from scientific research in psychology helps us improve the quality of education, product and interface designs, and the quality of lives of people with various visual and mental disorders.

After attending this series of talk the audience will better appreciate the scientific principles underlying the simple act of “seeing” and how psychologists use vision as a window to understand how human mind and the brain works and even consciousness. For example,

The Continuity of Mind - Spivey

This theory goes against the popular analogy of mind as modular/discrete computers. This is a dynamical continuous approach to the “behind the scene” for the process of “seeing” and how we interact with our environment.

Perceptual Learning - Herzog

- Can we perceive a cat as a dog?
- Can we label a cat as a dog?

The topic deals with how we learn perceptual cues about the world, how external feedback biases decisions but not perception: we cannot perceive a cat as a dog but we might be willing to say so…
Perceptual Learning: Applications - Kellman

This talk will focus on human abilities to discover and encode abstract relations (as in perception of a shape, a melody, or in language), dimensions of learning crucial to expertise in any domain and applications in various domains such as math education, design of interfaces for air-traffic controllers, medical imaging, etc.

http://kellmanlab.psych.ucla.edu/HPL/

Perceptual Learning & Amblyopia/Lazy Eye - Yu

Abnormal visual experiences in early childhood can lead to serious consequences. This talk will discuss the various consequences and how principles of perceptual learning derived from scientific research in psychology can help children with visual disorders.
ABSTRACTS

Title: The Continuity of Mind  
Speaker: Prof. Dr. Michael Spivey (UC Merced, USA)  
Abstract: Traditional accounts of cognition rely on a metaphor of treating the mind like a computer. In that framework, visual perception and language processing are separate subprocessors, or modules, with little or no interaction between them. However, recent findings in cognitive science have shown that the process of visual perception and the process of language comprehension appear to share their information with each other continuously. In a fraction of a second, your language processing system can tell your visual processing system what to do, and vice versa. Therefore, rather than thinking of the human mind as a sequence of discrete stages that perform their logical operations in a feedforward manner, recent approaches to cognitive science have included dynamical systems theory to help understand how interactive subsystems can coordinate to produce intelligent cognitive behavior.

Title: How the Conscious Mind Constitutes itself through Perceptual Learning  
Speaker: Prof. Dr. Michael Herzog (EPFL, Switzerland)  
Abstract: Perceptual learning is learning to see. Whereas novices can hardly discriminate a Bourgogne from a Bordeaux wine, wine experts, sommeliers, cannot only easily discriminate between the two but can often even identify the grape and vineyard of a wine. Lifelong training makes experts. Perceptual learning is thought to be driven by the repeated presentation of stimuli, which changes synapses in the brain. However, we have recently shown that perceptual learning can occur even when observers just imagined the stimuli. Hence, learning does not need external world stimuli. Using combinatorial reasoning, I will discuss why imagery learning is not as exotic as it might seem.

Perception & Schizophrenia - Giersch

This talk will illustrate similarities and differences in visual perception between the normal population and people with various mental disorders.
Title: Perceptual Learning and its Applications  
Speaker: Prof. Dr. Phil Kellman (UC Los Angeles, USA)  
Abstract: Recent advances in the learning sciences offer remarkable potential to improve almost any kind of education or training. I will discuss two areas of innovation: perceptual learning and adaptive learning technologies. Whereas learning in educational settings most often emphasizes facts and procedures, research on expertise indicates that a crucial component of learning in any domain involves improvements in the way information is picked up: perceptual learning. Experience changes information extraction in ways that involve both discovery effects – coming to select the features and patterns that are important -- and fluency effects – becoming able to extract information quickly and with low cognitive load. Although much perceptual learning research focus on simple sensory tasks, we have applied perceptual learning concepts to high-level cognitive domains, including mathematics, science, medicine, and aviation. These applications, in the form of Perceptual Adaptive Learning Modules, can successfully accelerate pattern recognition and fluency, leading to rapid skill improvement. These methods also benefit from novel adaptive learning technologies that use learner performance in interactive learning to space and sequence learning events, challenges in learning in mathematics, science, medicine, and aviation. Secondly, perceptual and adaptive learning, separately and in combination, have remarkable potential to improve learning and objective assessment of learning in a wide range of educational and training domains.

Title: Perceptual Learning & Amblyopia/Lazy Eye  
Speaker: Prof. Dr. Cong Yu (Peking University, China)  
Abstract: Amblyopia is characterized by poor visual acuity in the amblyopic eye (AE) as well as degraded stereoacuity. Many studies reported that perceptual learning, in which AE practices a visual discrimination task, improves these visual functions to some degree. In this talk I will describe a push-pull training method that could reduce interocular suppression, and so as to further improve visual acuity and stereoacuity in amblyopes who have already participated in many hours of perceptual learning experiments.

Title: Schizophrenia and Time: a Disrupted Vision of the World  
Speaker: Prof. Dr. Anne Giersch (INSERM, Strasbourg, France)  
Abstract: Schizophrenia is defined by its clinical symptoms, delusions, hallucinations, emotional withdrawal, or a disorganization of thought. It is also accompanied by cognitive disorders, and among them, visual perception deficits. Perceptual deficits have been proposed to reflect the patient’s disorganization of thought, but these deficits are still mysterious, and understanding how patients see the world remain a challenge. We will illustrate how elementary deficits in the temporal domain may destabilize the patients’ representations of the outer world by impairing their ability to follow events over time. The meaning of these impairments will be discussed at the light of early clinical reports suggesting that temporal impairments are at the core of the patients’ difficulty to look forward (a loss of ‘vital dynamism’). We will show how these deficits question our sense of time continuity.
About the speakers:

Each and every speaker is an eminent scientist in the field of visual perception, principal investigator of world-class laboratories, has published numerous highly cited research articles that have revolutionized this area of research, recipients of coveted research awards and research honors, fellows of prestigious societies and editors of journals with high impact factors.

Prof. Dr. Michael Spivey (USA)
- Author of “The Continuity of Mind” (2007)
- Associate Dean of School of Social Sciences, Humanities and Arts at University of California, Merced.
- Professor in Cognitive Science at University of California, Merced. His research group studies aspects of perception, cognition and action, more specifically the interaction between visual perception and language.

Prof. Dr. Michael Herzog (Switzerland)
- Professor of psychophysics at the Brain Mind Institute (BMI) at the EPFL in Lausanne
- Studied at University of Erlangen & University of Tübingen in Germany, and MIT & CalTech in USA
- World renowned researcher who investigates visual perception with psychophysics and brain imaging.
- Theorist about the insufficiency of current models for explaining consciousness.

Prof. Dr. Phil Kellman (USA)
- Director of Human Perception Laboratory at University of California, Los Angeles.
- Past: Chair, Cognitive Area, UCLA Department of Psychology, 1993-
- Director, UCLA Cognitive Science Research Program, Director, 1993-2003
- Professor Step VI, University of California, 2004 (Step VI is a special rank conferred in the US system "upon evidence of great distinction, recognized nationally or internationally, in scholarly or creative achievement.")
- Finalist, 2nd International Best Visual Illusion of the Year Contest (with Evan Palmer), 2004
- Studies various aspects of theoretical and applied perception including perceptual learning, adaptive learning technology, perceptual organization, spatiotemporal interpolation, shape perception, etc.
Prof. Dr. Cong Yu (China)

- Professor in Psychology at Peking University and Peking-Tsinghua Center for Life Sciences.
- Uses psychophysical techniques for deeper understanding of perceptual learning and its application in clinical practices.

Prof. Dr. Anne Giersch (France)

- Director of the INSERM Laboratory U1114 ‘Cognitive Neuropsychology and Pathophysiology of Schizophrenia’ in Strasbourg, France
- Psychiatrist and Doctor in Neuroscience, Research Director at INSERM (French institute for Medical Research).
- The aims of the laboratory are to develop a better understanding of schizophrenia by exploring how neurobiological and cognitive deficits lead to clinical symptoms, and to develop new therapeutics, eg cognitive remediation.
- Explores visual perception in time and space, e.g. how the outer world appears stable despite our perception being adapted to our needs, and how this is disrupted by psychotropic drugs or mental pathology.