

## 30th of August -- Illusion & Demo Night

*Starts at ± 18:45. Huygens building, Heyendaalseweg 135, 6525 AJ Nijmegen*

### Our illusions & demos

#### **Illusory colours in monocular rivalry. (Leone Burridge)**

Acrylic paintings are shown with only 2 colours and grey, but after a short while, you will hopefully see 4 colours alternating in pairs. These colours are created in your mind. The print on paper is an earlier work with 4 colours. The works are not for sale. The artist retains copyright.

#### **Localizing sounds. (Marc van Wanrooij, Snandan Sharma)**

When you or objects in the world are moving, where you think those objects are and where they actually are might be different at any given time. You need to account for these movements if you want to interact with those objects. In this demonstration, you will be rotated in two axes, while you will be required to localize brief flashes of light. We will show what the rotations do to your eye movements.

#### **Audiovisual Integration. (Nina Haukes)**

Sound localization is a complex feat. Your brain needs to estimate where sounds are coming from based on spectrotemporal information received in two ears without explicit spatial information. Surprisingly, humans are one of the best mammalian sound localizers. In our lab, we will demonstrate how well you can localize sounds, explain how this process works, and show where you localize unlocalizable sounds. Seeing and hearing influence each other, to create cross-modal effects. During this demo, you will be experiencing 1) the Sound-Induced Flash Effect, 2) the Ventriloquist Effect and 3) the McGurk Effect. For 1) you will be seeing what hearing tells you, for 2) you will be hearing what vision tells you, and for 3) you will be experiencing a new phenomenon that cannot be explained by seeing or hearing alone.

#### **Magic for the mind's eye. (Vebjørn Ekroll)**

Demonstration of various well-known magic tricks, puzzles and "illusions of impossibility". Although these tricks are traditionally presented in a way that relies on the sense of vision, I speculate that some of them may be adapted for non-visual presentation because the main working principles are quirks in human spatial imagery. Come and see for yourself with your mind's eye!

#### **Interacting with visual illusions in Virtual Reality. (Rachael Taylor)**

By tracking the physical hand in real time, people can interact with an immersive virtual version of the Ebbinghaus illusion. This is a size illusion displaying circles (<https://imgur.com/a/Hi9DXnq>). The hand trackers can also be used to mirror the hands, so that the physical left hand is animated as the right in this virtual environment. This demonstration highlights the potential of interactive, immersive virtual environments in the study of visual perception.

### **Create interesting visual displays with OCTA. (Eline Van Geert)**

Visual displays differ in how many and how varied the objects in the display are, as well as in how these elements are organized in the display. For example, these objects could be organized based on the color, shape, or size of the elements, and could be placed in rows, columns, or more complex organizations. Which organization do you like best? And do you prefer objects to be very similar or more varied? Come and explore different options using the Order and Complexity Toolbox for Aesthetics (OCTA)!

### **Spell individual symbols and sentences with a brain computer interface! (Jordy Thielen)**

This Brain-Computer-Interface helps the user spell symbols as fast as possible. Visual evoked potentials to rapid visual stimulation are recorded with electroencephalography (EEG), and a computer uses machine learning techniques to interpret these brain signals.

### **Visual illusion workshop. (Richard van Wezel)**

Workshop in which children can create their own spinning top with visual illusions. Other visual illusions will be on display in this room.

### **Inconsistent Perception. (Jeroen Smeets, Eli Brenner)**

We will present two examples of how the perception of motion of objects is inconsistent with the simultaneously perceived change of position.

### **Contour Erasure Filling-in Effects. (Yih-Shiuan Lin, Chien-Chung Chen, Mark W. Greenlee, Stuart Anstis)**

Contour erasure is the phenomenon that low-contrast objects can completely disappear from sight, or be filled in by the background texture, after viewing flickering object outlines for a while. This contour erasure drastically speeds up the filling-in process, and reveals the importance of edge information in perceiving objects and surfaces. In our demos (<https://osf.io/jq86w/>), you will see several examples of the fascinating contour erasure effect: objects completely disappear into the background or merge together after only a short adaptation period on their contours (please fixate always at the center fixation dot for the illusion to work).

### **Following others' footsteps: A contextual attraction effect of walking direction induced by biological motion. (Yuhui Cheng)**

"Pedestrians (or close friends) always walk collectively, which reflects intangible social bonds among people. Here we demonstrated that implicitly perceived social bonds could impinge on our context-dependent perceptual processes. Using multiple biological motion walkers and a direction discrimination paradigm, we found the perceived walking direction of a central walker was attracted toward the walking direction of surrounding walkers, which was not accounted for by low-level factors. This attractive contextual modulation most probably reveals a perceptual alignment urged by the implicit social bonds among people, which hints an evolutionarily adaptive mechanism that can bias our perception in accordance with social cohesion. The experimental demos have been made

publicly available via the Institutional Knowledge Repository, Institute of Psychology, Chinese Academy of Sciences, and can be accessed at <http://ir.psych.ac.cn/handle/311026/39958>."

### **An apparent-motion colour illusion. (Rob van Lier, Vebjørn Ekroll)**

An illusory color phenomenon is introduced in which a display of colored disks alternates with a second display with similar disks, but having different colors. Crucially, the disks in the second display are partially overlapping each other, while the overlapping regions have the same color as the disks in first display. When the displays alternate, half of the disks seem to jump back and forth (apparent motion). It turns out that the perceived colors highly depend on the relative position of the disks. The demonstration suggests that color filling-in processes can be mediated by apparent motion.

### **Object solidity disambiguates ambiguous motion. (Dawei Bai)**

Ambiguously moving stimuli create multi-stable percepts that can be interpreted in different ways. However, across three displays, I will demonstrate that when some interpretations require objects to pass through each other, we prefer the interpretations respecting the physical law of object solidity. These displays demonstrate that object solidity is integrated in the processing of ambiguous motions.

### **Come test your stereoscopic vision! (Bernd Lingelbach, Nicholas Wade)**

Come test your stereoscopic vision with the rotating Necker-cube! In 1832 L.A. Necker described that the 3D-interpretation of the flat picture of a cube is always ambiguous. From time to time the perception changes as it is shown in the picture below. In 1838 Charles Wheatstone observed that this ambiguity is still there if a 3D cube is rotating. It might rotate clockwise or counter-clockwise. It is even more complex if the cube rotates in front of a mirror, because the ambiguity is present for the real cube and also for its mirror image. We present 3 experiments demonstrating this effect. The experiment seems to be an easy way to determine the personal limiting distance for stereoscopic vision.

### **Ganzflicker. (Reshanna Reeder)**

"Ganzflicker is a full-display, red-and-black flicker at 7.5 Hz. Within a couple of minutes, it elicits the experience of pseudo-hallucinations in 88% of people. Pseudo-hallucinations can be illusory colors and geometric patterns such as spirals, spiderwebs, and shooting stars. Interestingly, about 30% of people see complex real-world things and environments like faces, animals, forests, and cities.

Ganzflicker has proved to be an extremely popular phenomenon: following a pop media article in ""The Conversation"" about its psychedelic simulation capabilities, it was experienced by hundreds of thousands of individuals around the world.

Ganzflicker is typically experienced via personal computer, but effects are enhanced with a larger display, and previous small-group demos have sparked lively discussion about the different effects people experience. Now, I'd like to share Ganzflicker as a group experience at ECVF Illusion & Demo Night. The experience, along with a custom synced soundtrack, can be viewed here: <https://youtu.be/QI1NjrvXXjs>"

**Out-of-body demonstration. (Arno Koning)**

In this demonstration you can experience an out-of-body sensation by letting you perceive and feel something different than what is actually going on.

**Cerebral Visual Impairment in the picture - Experience Toolkit. (Bianca Huurneman)**

The project 'Cerebral Visual Impairment in the picture' aims to increase the knowledge of those who need it the most: the parents/caregivers of children who have CVI, the professionals who work with them and, last but not least, the adolescents and adults who have CVI. It includes a book (<https://www.visio.org/visio.org/media/Visio/Downloads/book-cvi-in-the-picture-royal-visio.pdf>), a film (<https://www.youtube.com/watch?v=9wvGZiTDwa8>) and an interactive experience workshop that allows different aspects of CVI to be experienced. At ECVP 2022, visitors of this demo will have a chance to experience different aspects of CVI.

**Exploring the Frame Effect. (Patrick Cavanagh & Stuart Anstis)**

The effect of a moving frame on flashed tests is one of the strongest illusions of position yet reported -- the illusory separation between two tests is often 100% of the frame's motion. Here we reveal the principles of frame continuity and flash/frame grouping that underlie the frame's effect across 21 variations. See them here: <https://cavlab.net/Demos/FrameEffect>

**A VR demonstration of attention. (Richard van Wezel)**

In this VR demo about attention, something is changing in the video, but can you actually see it?

**Rotating objects cue spatial attention via the perception of frictive surface contact, (Hong B Nguyen & Ben van Buren)**

Beyond reasoning about physical forces, a rich tradition in perceptual psychology suggests that we may also \*see\* forces much more directly. We introduce a new demonstration of implicit physical knowledge within visual cognition, using rotating stimuli that make contact with the floor or a 'ceiling'. For a terrestrial object that makes contact with a floor surface, clockwise (counterclockwise) rotation will tend to be associated with rightward (leftward) movement. ECVP attendees will be invited to participate in a short (2-minute) version of our cueing experiment ([https://www.nssrperception.com/which\\_letter\\_was\\_shown/](https://www.nssrperception.com/which_letter_was_shown/)).

**Restoring vision in the blind? A VR simulation of bionic vision. (Jaap de Ruyter van Steveninck & Maureen van der Grinten)**

Research groups all around the world are working on a solution to restore some form of vision for the blind, using a brain implant. Pilot studies have shown promising results. Still, one of the big questions is: what will these implant users be able to see? How useful is this so called bionic vision? And can we optimize it for daily life tasks? With VR simulations, we, at the Radboud University, are trying to find an answer to these questions. With our VR demo, you can try out yourself what it would be like to observe the world through a bionic vision system. Example video: <https://youtu.be/1YMs6jXUs0s?t=300>

**iGLWidgets – a new collection of HTML5 widgets for Vision Science. (William Beaudot)**

"iGLWidgets are a new collection of interactive educational widgets for vision science that can run offline or in any WebGL-compatible browser. These iGLWidgets can be used for example to demonstrate visual illusions, teach visual perception, share visual stimuli with others, or even as supplementary material in publications.

In particular, they can help demystify the phenomenon of visual illusions to the general public by demonstrating that, rather than being “magic”, they rely on specific visual properties and mechanisms in the brain. With these iGLWidgets, non-experts can play with various controls to change the strength of the effect and develop a more intuitive understanding of the real nature of the illusion. For the experts, we will also show how they can create their very own iGLWidgets!

Here is a link to one of our iGLWidgets pages that show some popular illusions:

<http://www.psykinematix.com/widgets/collection2.php>"

**Reverspectives and hollow masks: a synthesis of art and illusion. (Patrick Hughes)**

Art works that demonstrate new perspectives and illusory percepts, including a Reverspective and a hollow mask illusion.