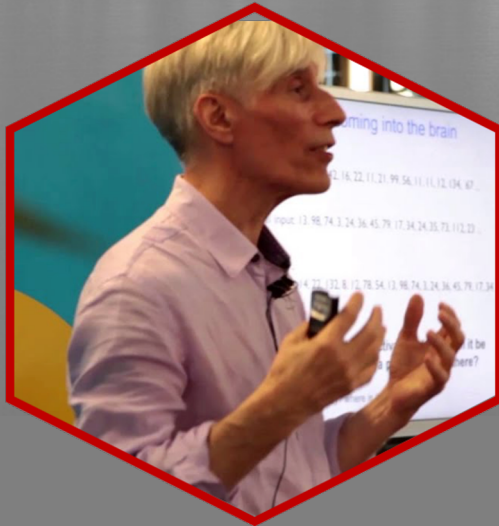


# FROM PICTURE TO REALITY, FROM OBSERVER TO AGENT

**VISION RESEARCH CONFERENCE  
YORK UNIVERSITY  
JUNE 6-9  
2022**



**Keynote Address:  
Dr. Kevin O'Regan**



**Interdisciplinary  
Talk and Poster Sessions**



**Celebrating  
Dr. Laurence Harris**

## DETAILS & HIGHLIGHTS:

- Trainee and researcher poster sessions
- Industry partners exhibition
- Networking opportunities
- Final-day banquet
- Dates: June 6<sup>th</sup> – 9<sup>th</sup>, 2022
- Location: New Student Centre YU
- [www.yorku.ca/cvr/conference2022/](http://www.yorku.ca/cvr/conference2022/)

## SESSION TOPICS:

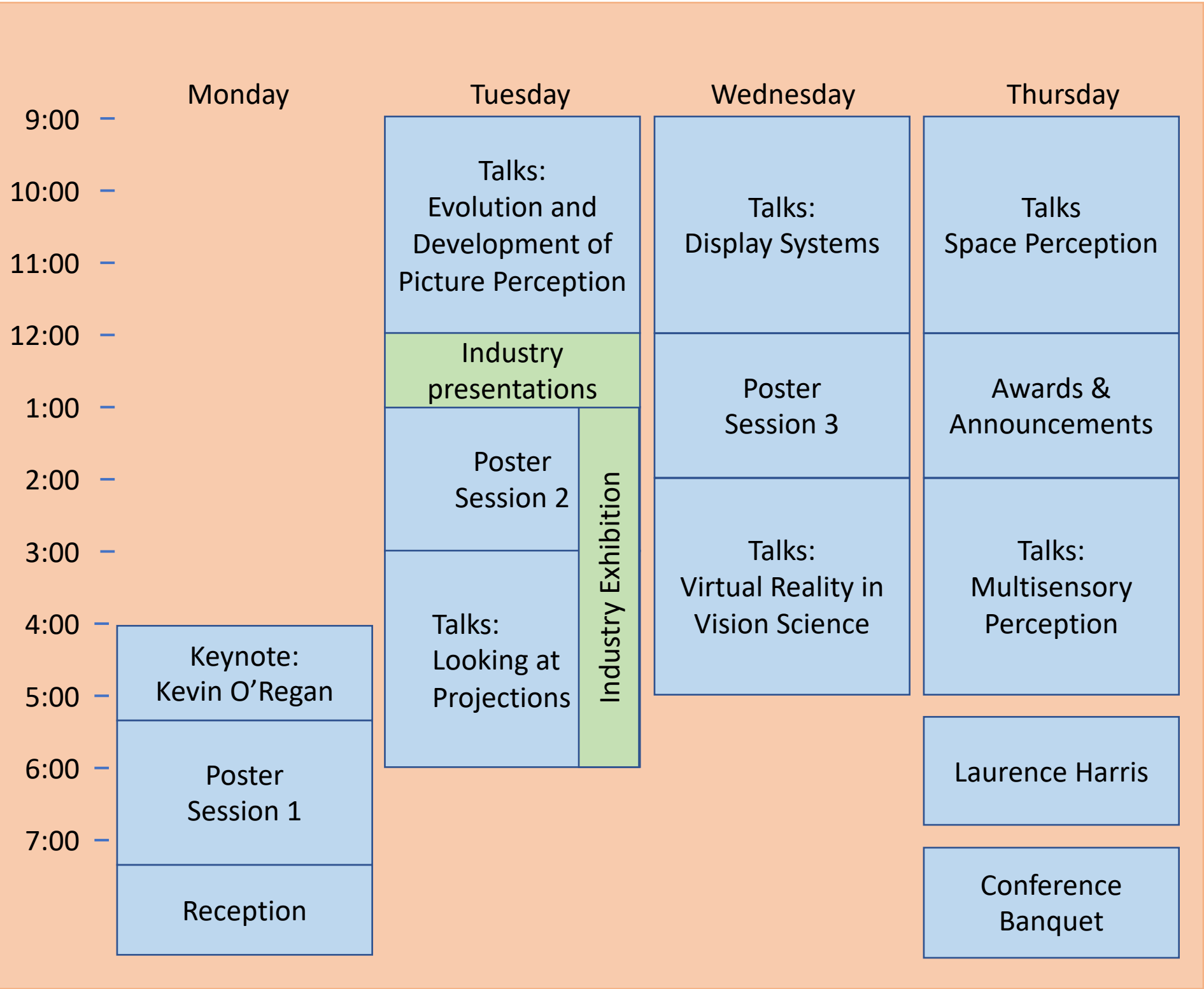
- Evolution and development of picture perception
- Looking at projections
- Display systems: From drawings to holograms
- Virtual reality in vision science
- Space perception
- Multisensory perception

# Vision Research: From Picture to Reality, from Observer to Agent

The CVR conference 2022 will connect the long history of picture perception with new display technologies that blur the differences between pictorial representations and the reality of the world that they attempt to depict. We also encourages poster contributions from every area of vision science.

The program will be complemented by lab visits, poster sessions, industry exhibitions and presentation, and a banquet in honour on outgoing CVR director Laurence Harris.

Confirmed session speakers include: Dora Angelaki, Marty Banks, Michael Barnett-Cowan, Jenny Campos, Craig Chapman, Jody Culham, Gabriel Diaz, James Elder, Marc Ernst, Elisa Ferrè, Gabriel Greenberg, Heiko Hecht, Hong Hua, Ludwig Huber, Michael Jenkin, John Kulvicki, Markus Lappe, Paul MacNeilage, Kevin O’Regan, Austin Roorda, Mel Slater, Jacqueline Snow, Charles Spence, Frank Steinicke.



# Vision Research: From Picture to Reality, from Observer to Agent

The CVR conference 2022 connects the long history of picture perception with new display technologies that blur the differences between pictorial representations and the reality of the world that they attempt to depict. Controlled, principled visual stimulation is at the core of vision research. Techniques have evolved from painted or printed material, to computer screens that provide control and enable rapid changes of graphical contents that soon included moving pictures and stereoscopic displays, and further to today's high-fidelity VR/AR systems and the prospect of holographic displays.

Picture perception is interesting for two reasons. On the one hand, the ability to abstract the depicted contents from the physical object of the medium, as humans do, is a trait that only few other animals are capable of. There is a rich tradition within vision science that focusses on picture perception and connects vision research with arts history, the philosophy of perception, and cognitive science.

On the other hand, vision research has often used pictorial displays with the implicit assumption that they provide a valid surrogate for the visual stimulation experienced in normal life. Consequently, the results obtained in the lab are expected to generalize into the real world. More recently, however, researchers began to challenge this assumption and started to compare picture perception and vision in the real world explicitly.

Virtual reality, augmented reality, and the development of light-field-based holographic displays provide excellent tools to that end. The defining feature, namely the ability to update stereoscopic displays contingent with the user's movement, is more than an incremental increase in representational fidelity. It transports passive observers who look at pictorial space into active agents that become part of that space. It establishes visual presence and employs the user's visual system in ways much more similar to the ones in which we process the "real" visual environment. An industry exhibition during the meeting will showcase exciting new developments in display techniques and their applications.

The topic of CVR 2022 lends itself to celebrate the achievements of CVR's outgoing director, Laurence Harris. Reality constitutes itself in terms of consistencies between sensory modalities and the predictability of sensory stimulation in response to movement. Harris, while working on multisensory integration, space perception and self-perception in space, pioneered the emancipation from the picture domain. He started to work with real world stimuli, he adopted virtual reality for vision research long before others did, and he sends his participants into orbit to manipulate their sensory environment in ways that would not be possible anywhere on earth.

After kick-starting the conference on Monday evening with a keynote lecture by Kevin O'Regan, the talk sessions will focus on picture perception on Tuesday and present research on display technology and its usage in vision research on Wednesday. Thursday will feature sessions on space perception and on multisensory perception with speakers who relate directly to former CVR director Laurence Harris's lifetime achievements. The program is complemented by poster sessions, and an industry exhibition, while still leaving time for informal networking and shop talk.

The Organization Committee: Niko Troje, Joel Zylberberg, Denise Henriques, Michael Barnett-Cowan

## Monday, June 6, 2022

4:00 pm	Opening remarks
4:15 pm	<b>Keynote Address</b> <b>Kevin O'Regan</b> , Paris Descartes University What do we mean by physical reality?
5:15 pm	<b>Poster session 1</b>
6:00 pm	<b>Opening Reception</b>

## Tuesday, June 7, 2022

9:10 am	Welcoming remarks
<b>Talks 1: Evolution and Development of Picture Perception</b> <b>Chairs: Patrick Cavanagh and Jennifer Steeves</b>	
9:40 am	<b>Ludwig Huber</b> , Veterinary Medicine Uni., Vienna Eye-tracking with dogs: Achievements and challenges
10:20 am	<b>Jody Culham</b> , Western University Closing the loop with Immersive Neuroscience: On the importance of real actions and feedback for brain and behavior
11:00 am	<b>Break</b>
11:20 am	<b>Jacquie Snow</b> , University of Nevada, Reno Comparing brain responses to real objects versus 2-D pictures: Emerging fMRI data from the adult brain and its implications for understanding the developing cortex
12:00 pm	<b>Industry presentations / exhibition</b>
1:00 pm	<b>Poster Session 2 / Lunch break</b>
1:00 - 6:00	<b>Industry Exhibitions</b>
<b>Talks 2: Looking at Pictures</b> <b>Chairs: Marcus Brubaker and Erez Freud</b>	
3:00 pm	<b>Heiko Hecht</b> , University of Mainz The privatization of pictorial space
3:40 pm	<b>Gabriel Greenberg</b> , UCLA Picture perception and the radical variability of the visual system
4:20 pm	<b>Break</b>
4:40 pm	<b>John Kulvicki</b> , Dartmouth University Non-spatial projections
5:20 pm	<b>James Elder</b> , York University Single-view 3D perception in humans and machines

# Wednesday, June 8, 2022

## Talks 3: Display systems: From drawings to holograms

Chairs: Michael Brown and Laurie Wilcox

9:00 am	<b>Frank Steinicke</b> , University of Hamburg B(l)ending Realities
9:40 am	<b>Hong Hua</b> , University of Arizona Head-mounted light field displays for virtual and mixed reality
10:20 am	<b>Break</b>
10:40 am	<b>Austin Roorda</b> , UC Berkeley The sharpest, brightest, highest-contrast, most-impractical, gaze-contingent display ever built
11:20 am	<b>Martin Banks</b> , UC Berkeley Binocular Vision and Oculomotor Behavior in Natural and VR-Gaming Environments
12:00 pm	<b>Poster session 3 / Lunch break</b>

## Talks 4: Display systems: Virtual Reality in Vision Science

Chairs: Michael Jenkin and Graham Wakefield

2:00 pm	<b>Gabriel Diaz</b> , Rochester Inst of Technology The role of predictive eye movements in naturalistic ball catching tasks
2:40 pm	<b>Jennifer Campos</b> , University of Toronto Seeing, hearing, moving: Age-related changes to multisensory integration processes supporting mobility
3:20 pm	<b>Break</b>
3:40 pm	<b>Craig Chapman</b> , University of Alberta Gaze and movement analysis (GaMA) in real and virtual worlds
4:20 pm	<b>Mel Slater</b> , University of Barcelona Illusions and Applications of Virtual Reality



# Thursday, June 9, 2022

## Talks 5: Space Perception

Chairs: Rob Allison and Shayna Rosenbaum

9:00 am	<b>Elisa Ferrè</b> , Royal Holloway University, London Vestibular System: From signal encoding to perception
9:40 am	<b>Markus Lappe</b> , University of Münster Walking with others
10:20 am	<b>Break</b>
10:40 am	<b>Paul MacNeilage</b> , University of Nevada, Reno Sensory and motor signals mediating stationarity perception
11:20 am	<b>Dora Angelaki</b> , New York University Eye movements for active sensing and memory during visually-guided navigation
12:00	Awards Presentation

## Talks 6: Multisensory Perception

Chairs: Denise Henriques and Doug Crawford

2:00 pm	<b>Michael Barnett-Cowan</b> , University of Waterloo Seas the day: Developing a VR exergame during COVID-19
2:40 pm	<b>Marc Ernst</b> , University of Ulm Development of multisensory perception and displays
3:20 pm	<b>Break</b>
3:40 pm	<b>Charles Spence</b> , University of Oxford Coloured hearing, colour music, colour organs, and the search for perceptually meaningful correspondences between colour and sound
4:20 pm	<b>Michael Jenkin</b> , York University Growing old and the effects of multi-cue integration
5:00 pm	<b>Celebrating Laurence Harris</b>
7:15 pm	<b>Conference Banquet</b>