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Welcome Address

Welcome to the 43rd European Conference on Visual Perception (ECVP2021)! The tradition of holding an annual European Conference on Visual Perception has its origins in the "Workshop on Sensory and Perceptual Processes" that was held in Marburg, Germany in 1978 and organised by Dick Cavonius, John Mollon, Ingo Rentschler and Lothar Spillmann. The following year, a second meeting was held in Noordwijkerhout in the Netherlands and that established the practice of holding an ECVP meeting in a different European town or city and organised by academics and researchers in the local University. Uniquely, ECVP has no permanent organisation and, as a consequence, each meeting has been different and reflective of the ideas and interests of the local organisers. But the underlying goal has remained the same: i.e. to provide a forum for the presentation and discussion of new developments in our understanding of human, animal and machine vision, and an occasion where empirical, theoretical and applied perspectives of visual processing are presented and open for lively discussion.

At those early meetings, most of the presentations were from researchers in the UK, Germany, Belgium, France, Italy and the Netherlands but very soon ECVP became a truly international meeting with participants from all over the world. As a result of Richard Gregory's friendship with Adam Gelbtuch and his publishing company Pion, ECVP established a close link with the journal Perception, and the journal has published the ECVP Abstracts from nearly every meeting since the 1980's. There have also been many changes to ECVP in the 43 years since that first meeting - changes in the topics of greatest interest as well as changes in the technologies that have allowed us to study perception in different ways.

However, the Covid-19 epidemic created possibly the most significant challenge that ECVP has ever faced - the decision of whether to hold the 2021 meeting ONLINE. At the end of March 2021 (just five months before the start of the meeting), a group of ~40 individuals (including many who shared their experiences as past organisers of ECVP) met on Zoom to discuss the pro and cons of holding an online ECVP. There were many different opinions but one thing became obvious - no single individual could possibly organise such a meeting in such a short amount of time. The result - a group of 11 of us (the "Team") offered to plan and organise an online ECVP2021.

As none of us had previously organised an online meeting, there were many challenges. One of our first decisions was to restrict the timing of the talk sessions to just three hours in the afternoon (CEST) so that these could be heard live by attendees from the west coast of the USA to Australia and New Zealand. Second, we wanted the talk presentations to be given live (rather than recorded) in order to make the meeting more like the friendly and positive atmosphere of previous ECVP meetings. Third, the decision not to charge conference fees meant that the website (www.ecvp2021.org), registration and abstract submission systems, Zoom channels, online poster platforms etc., had to be created and maintained directly by members of the organising team and their respective institutions.

We initially thought that the conference might attract ~500 Abstract submissions and we thought that there would be some 800-1000 registrations. As it turned out, there were nearly 650 Abstract submissions and over 1900 registrations. After an extensive review process conducted by the session chairs and scientific motivates approaching or aversive behaviors. [This study was supported by the Ministry of Sciences and Technology in Taiwan (MOST 107-2410-H-002-129-MY3).]

Face-inversion effect of gaze perception in the frontoparallel plane

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The face-inversion effect is a well-known perceptual phenomenon to explore whether the face has been processed holistically (Yin, 1969) and has been reported to affect gaze perception (Jenkins & Langton, 2003; Schwaninger et al., 2005; Yokoyama et al., 2011, 2014). Although these previous studies have subjected the consciousness or attention to direct gaze, it has not been clarified how gaze direction is perceived. The present study examined the effect of face-inversion on the perceived gaze direction in the frontoparallel plane. The gaze direction deviated in 8 patterns (± 5, ± 10, ± 15, and ± 20 degrees) in each of the horizontal and vertical directions. The participant's task was to choose a perceived gaze direction from among the markers attached to a transparent plate. The deviation angle of the perceived gaze direction was calculated based on the location of the markers. A linear regression equation was fitted between the perceived and physical gaze directions. A two-way ANOVA analyzed the parameters with face direction (upright or inverted) x gaze direction (horizontal or vertical) as factors. As a result, the main effects of both factors were significant for the regression coefficients. It was found that the regression coefficient was larger for upright faces than for inverted ones and be larger for horizontal direction than for vertical ones. The results suggest that gaze perception is an anisotropy in the frontoparallel plane regardless of whether the face is upright or inverted and that the deviation of gaze direction is perceived for upright faces larger than for inverted ones. [This work was supported by JSPS KAKENHI Grant Number JP20K14227.]

Does animating virtual characters affect later face identity processing?

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Previous work from our group and others has demonstrated that learning a new face in the context of a dynamic head/body improves subsequent processing, relative to learning static snapshots (Knappmeyer, Thornton, & Bülthoff, 2003; Pilz, Thornton & Bülthoff, 2006). Here, we extend this work by asking whether computer-generated animations giving the impression of a live model (e.g., slight body sway, small changes in head posture, varied eye-contact) afford an advantage over a single static view of a virtual character. Participants were familiarized with two virtual characters using an incidental learning paradigm. The 3D characters were created based on photographs taken from the Glasgow face database (Burton, White, & McNeil, 2010) and had the same body, head outline and texture. During learning one character was presented in motion, the other as a static snapshot. The two identities alternated on screen while a series of questions were answered (e.g., Who looks happier? Sara or Lisa). At test, novel faces were generated by morphing each target identity 50/50 with 10 new identities. The task was to assign the correct "family" to the new character. Each new character was shown twice: once with congruent mapping relative to learning (i.e. motion-motion or static-static) and once with incongruent mapping (i.e., motion-static or static-motion). Preliminary results show above chance performance in all conditions and a clear trend for a congruency effect between learning and testing motion conditions, with better performance in congruent conditions.

Face detection from patterns of shading and shadows

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Here we investigate how characteristic patterns of shading and shadows that occur across the face act as a cue for face detection. We use 3D-graphical rendering to isolate facial shading under controlled lighting conditions. The rendered images are converted to two-tone images ('Mooney faces') to isolate broad patterns of contrast. We measured human performance in discriminating faces from non-face objects when rendered in identical lighting conditions. We find that the production of recognizable sensory patterns depends strongly on the lighting direction relative to the face. In particular, light arriving from above the brow tends to facilitate face detection, consistent with the statistics of real-world lighting environments, in which light commonly arrives more strongly from above. Indeed, in a further experiment, we find that asymmetries in lighting that occur in complex and naturalistic lighting environments produce contrast patterns across the face that facilitate face detection. Comparison with the performance of an image classifier trained to discriminate faces from non-faces suggests that these effects might in part be due to differences in image information across conditions as well as to human familiarity with overhead lighting. These results demonstrate that the sensory features that define a face