Compound Eyes: from Biology to Technology

Workshop, Tübingen, Germany, March 26-28, 2013

Among biological vision sensors, the compound eye is one of the most successful designs, supporting visual behavior as diverse as flight stabilization, obstacle avoidance, place recognition, or the detection of prey and mates. Compound eyes differ from the standard camera principle in their **imaging geometry**, which is not characterized by a pin-hole and central projection, but rather allows an individual assignment of a viewing direction to every pixel. Early steps of processing, e.g. for **intensity normalization** and **motion detection**, are integrated with the light-sensitive stage, allowing fast generation of relevant data. In technical applications, the compound eye principle will be useful for tasks requiring large fields of view, high-speed acquisition of data, adaptive changes of local image resolution, or tasks where bulky and energy-consuming devices are to be avoided.

The workshop will bring together **students, researchers, and industry** from Neuroscience, Perception, Microsystems Technology, Applied Optics, and Robotics to discuss recent developments in the understanding of compound-eye imaging, the construction of artificial compound eyes, and the application of artificial compound eyes in robotics or ubiquitous computing. It will include a presentation of the **CURVACE**, a newly-developed curved artificial compound eye supported by the European Commission.

Who should attend?

- Students
- Researchers
- Industry

Sessions

- Compound Optics and Imaging
- Motion detection and Circuits
- Optic Flow
- Applications

Dates

- Registration open at www.curvace.org/workshop
- Poster submission: Feb 22, 2013

Confirmed Speakers

Andreas **Brückner** (IOF, Jena, Germany)
Michael **Dickinson** (UW, Seattle, USA)
Michal **Dobrzynski** (EPFL Lausanne)
Dario **Floreano** (EPFL, Lausanne, Switzerland)
Nicolas **Franceschini** (AMU, Marseille, France)
Robert **Leitel** (IOF, Jena, Germany)
Hanspeter A. **Mallot** (Uni Tübingen, Germany)
Ramon **Pericet-Camara** (EPFL, Lausanne, Switzerland)
Franck **Ruffier** (AMU, Marseille, France)
Toralf **Scharf** (EPFL, Neuchâtel, Switzerland)
Mandyam **Srinivasan** (UQ, Brisbane, Australia)
Wolfgang **Stürzl** (DLR, Munich, Germany)
Stéphane **Viollet** (AMU, Marseille, France)
Jean-Christophe **Zufferey** (SenseFly, Lausanne, Switzerland)

Venue

The workshop will comprise single-track oral sessions as well as a poster session. It will take place in the historic castle of Tübingen, Germany. Today, the castle is part of the University. It is renowned for the University Archeological Museum, featuring the Vogelherd Horse, one of the world's oldest pieces of sculpture (ca. 35,000 bc), as well as for the laboratory where Friedrich Miescher first isolated DNA in 1879.

Tübingen is a charming university city located in south-western Germany; the closest international Airport is Stuttgart (30 km). For further information, see http://www.curvace.org/workshop.

SEVENTH FRAMEWORK PROGRAMME

CURVACE
CURVED ARTIFICIAL COMPOUND EYES

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN