

CURVACE aims at developing the first curved, flexible and programmable artificial compound eyes.

This project brings together diverse disciplines:

microoptoelectronics

neuromorphic engineering

flexible electronics

vision processing

robotics

Project Coordinator

Prof. Dario Floreano
École Polytechnique Fédérale de Lausanne



Contact: Ramon Pericet-Camara
Laboratory of Intelligent Systems
Station 11
CH - 1015 Lausanne, Switzerland
Phone: +41 21 69 37755
Fax: +41 22 69 35859
E-Mail: ramon.pericet@epfl.ch

Project Partners

Université de la Méditerranée
Aix-Marseille II
Dr. Stéphane Viollet
CNRS-UNIVMED Institut des Sciences
du Mouvement Etienne Jules Marey
Groupe de Biorobotique
<http://www.ism.univmed.fr/>



Fraunhofer Institute for Applied
Optics and Precision Engineering
Dr. Robert Leitel
Department of Microoptical Systems
<http://www.iof.fraunhofer.de/>



Eberhard Karls Universität Tübingen
Prof. Hanspeter Mallot
Laboratory of Cognitive Neuroscience
<http://www.cog.uni-tuebingen.de/>



www.curvace.org

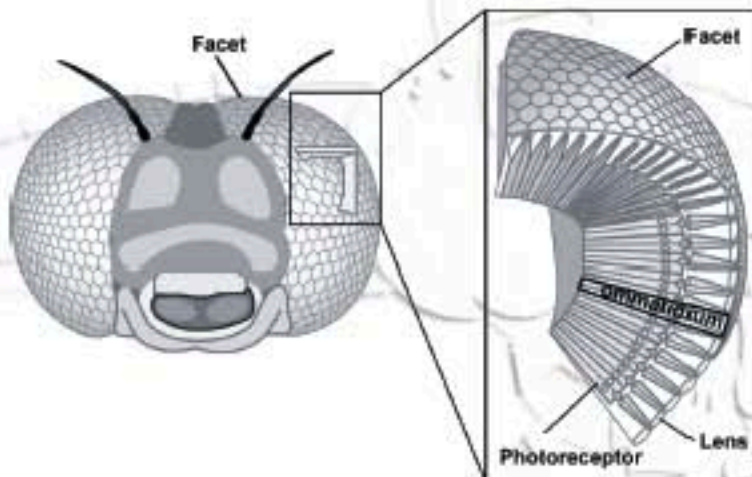


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Animal compound eyes

The compound eye consists of a curved array of microlenses each conveying light to one or more photoreceptors. This vision organ is very efficient for local and global motion analysis over a large field of view, making it an excellent sensor for accurate and fast navigation in 3D dynamic environments. Compound eyes are found in many invertebrates bearing a wide range of shapes, but still sharing the same working principle.



CURVACE will provide:

- more efficient visual abilities for motion analysis
- large field of view, no optical distortion, infinite depth-of-focus
- adaptive sensitivity issued by novel neuromorphic imagers
- mechanical adaptability to different shapes and curvatures
- small, thin and self-contained packaging
- programmability

Applications

CURVACE will offer advantages and novel functionalities in diverse application scenarios, such as:

- flying microrobots
- wearable sensing
- miniature collision-alert systems
- medical endoscopes
- soft robotics

