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Thesis Project Form

Title (tentative):   A neuromorphic model for the egocentric representation of the peripersonal space

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Description

Motivation and application domain

Reliable internal representations of the space immediately surrounding the body (peripersonal space) are instrumental to support a proper planning of action in the external world, as well as for handling unpredictable situations. Such a representation, primarily based on vision, should be capable of continuous adaptation while action unfolds.

General objectives and main activities

To obtain an egocentric visually-based representation of the peripersonal space by integrating stereopsis and eye movements. Space will be eventually represented by a population of head-centric depth detectors that are tuned to visual stimuli presented at restricted portions of the space, invariant with the contingent direction of gaze.

Training Objectives (technical/analytical tools, experimental methodologies)

1) Geometry of stereoscopic image formation
2) Neuromorphic binocular disparity detectors
3) Binocular eye movements

Place(s) where the thesis work will be carried out: Bioengineering lab

Additional information

Maximum number of students: 1