

Ph.D. topic 2015

Bio-inspired Vision for Mobile Robotics

Supervisor

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Co-supervisor(s)

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Presentation of the Ph.D. topic

The aim of this PhD is to be inspired by biological systems to induce realistic camera movements on a robotic platform. Indeed, complex eye strategies are at work during the observation and navigation in animals and humans [1,2]. These strategies can be transferred in the context of observation and navigation for a robotic platform. On the technical aspects, the candidate will use FPGA technology equipped with inertial sensors, actuators and a camera. After a literature review, much of the work will consist of signal and image processing in VHDL (or Verilog) and in the design of an electronic card.

Expected deliverables

The applicant will complete the design of a prototype of a vision robotic system. Another important deliverable will be the code associated to the hardware. Finally, the last required deliverables are the regular reports that have to be written in English.

Keywords

FPGA, electronics, bio-inspired systems, camera, inertial sensors, actuators.

Applicant profile

The applicant with a master degree should demonstrate good abilities in electronics and computer science. Some background knowledge on FPGA and ro-

botics are appreciated. Good English communication skills in both oral and writing are recommended.

Gratification: Compliant to French Regulation on Ph.D. students (Contrat doctoral)

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References

- [1] S. Hillaire, G. Breton, **N. Ouarti**, R. Cozot, and A. Lecuyer. Using visual attention models and saliency maps to improve gaze tracking in interactive 3d application. Computer Graphic Forum, 0:1–8, 2010.
- [2] M. Wexler and **N. Ouarti**. Depth affects where we look. Current Biology, 18(23):1872–6, 2008.