

## Research Internship 2013

### Detection/recognition of motion patterns in 3D for hand gesture recognition

#### Supervision:

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Keywords: computer vision, image processing, video analysis, stereovision.

#### **Context**

Developing new technologies in the medical field and more specifically for the Operating Room is a growing need. Those technologies are to be well integrated and constitute the new generation of Computer-Assisted-Surgery (CAS) systems which help surgeons. The project aims at developing new ways of interaction between surgeons and surgical microscopes. Only one type of sensors is used in this project, video cameras.

#### **Internship focus**

The internship work will first focus on investigating existing state-of-the-art techniques for motion patterns recognition. The aim is to recognize surgeons' hand gesture in order to send specific interaction commands to the surgical microscope. The main focus should be on 3D information coming from the stereovision cameras system, however 2D video information only could also be used if necessary. Tests will be performed on the surgical microscope available in our team.

#### **Trainee profile**

- Master or engineering school curriculum (with an emphasis on image processing).
- Knowledge: stereovision, image/video processing, pattern analysis.
- Programming skills: C/C++, Matlab, OpenCV.
- Would be of advantage: GPU programming knowledge (e-g: CUDA).
- English (read, written).

**Duration:** 5 to 6 months starting February 2013. Earnings planned.