ipal
Image & Pervasive Access Lab

Master Internship 2014
Detection and Segmentation of Nuclei and Mitosis on Histological Images

Supervisors
Ludovic Roux – ludovic.roux@ipal.cnrs.fr
Thomas Boudier – thomas.boudier@snv.jussieu.fr

The Cognitive Microscope (MICO) Project

MICO is a 3.5 years project supported by ANR, TecSan 2010 programme.

The MICO project deals with analysis of histopathological images of breast cancer. We have developed tools for the detection of mitosis and for the detection and segmentation of cell nuclei to evaluate nuclear atypia. Mitotic count gives an evaluation of the aggressivity of the tumour while nuclear atypia gives an indication about the degree of evolution of the cancer.
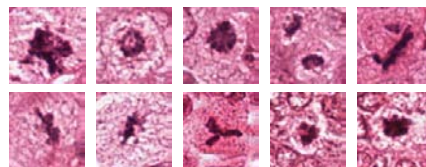
Examples of mitosis
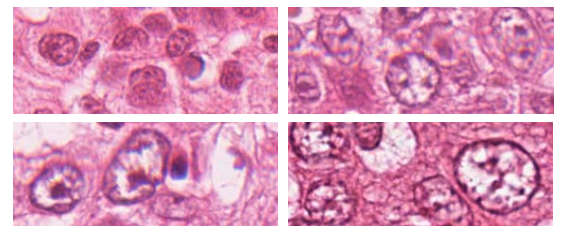
Examples of nuclear atypia

Convolutional Neural Networks (CNN) are the state-of-the-art in pattern recognition, ranking first in several international contests in the domain (ICDAR'13, MICCAI'13, ICPR'12, IJCNN'11). We are already using successfully CNN for the detection of cell nuclei.

This internship has the objective to study the use of spatial and symbolic information together with a Convolutional Neural Network (CNN) to improve the detection of cell nuclei and of mitosis on images of breast cancer.

Profile Required for the Applicant

- Master Degree in Computer Science or Engineer Student (last year of studies)

- Knowledge of Java and Python

Duration of the internship: 5 to 6 months, starting on the first semester of 2014.

Image & Pervasive Access Lab
1 Fusionopolis Way
#21-01 Connexis South Tower
Singapore 138632

Tel. (65) 6408 2542
Director. (65) 6408 2536
Fax. (65) 6776 1378

secretariat@ipal.cnrs.fr
www.ipal.cnrs.fr