

POST-DOCTORAL POSITION IN IMAGE PROCESSING

Title: Segmentation and tracking in a sequence of biological images

Description: Remarkable advances in the study of the phenotypic variability of clonal bacterial colonies have been made recently by using time-lapse microscopy imaging. From a sequence of images showing growing and dividing cells, a complete lineage (position of each cell, divisions) has to be extracted in order to feed statistical analyses. With the current image analysis tools, this process used to require a lot of interactions, which explains that only a few sequences have been completely analyzed up to now. A significant improvement was obtained recently (see [1]), but there still remains a critical need for a fully automated image analysis algorithm, able to process without human supervision the awaiting hundreds of recorded sequences that could reveal promising biological results. The applicant will work in collaboration with the other members of the Image Processing Team involved in this project, in order to develop new methods aiming at an automatic analysis of such sequences.

Related publication:

[1] M. Primet, A. Demarez, F. Taddei, A.B. Lindner, L. Moisan, "Tracking of Cells in a Sequence of Images Using a Low-Dimension Image Representation", accepted to ISBI'08 (PDF available on <http://www.math-info.univ-paris5.fr/~moisan/research.php>)

Location: Paris, France

Université Paris Descartes, MAP5 lab, <http://www.math-info.univ-paris5.fr/map5/>

Duration: 6 months, from september 1st, 2008 to february 28th, 2009

Gross salary: 3300 euros per month

Desired Profile: Ph.D. in applied mathematics or computer science or electrical engineering with a former research experience in image processing. Knowledge about segmentation, tracking or image sequence analysis will be appreciated.

This fellowship is funded by ANR, project EVOLVINGSYST n° ANR-06-BIOS-0011, involving the following teams:

- Image Processing Team (Univ. Paris Descartes):
L. Moisan, J. Glaunès, C. Graffigne, G. Koepfler, M. Primet, F. Richard
- Bioinformatics Team (Genoscope, Evry):
V. Schachter, P.-Y. Bourguignon, B. Pinaud
- Biology Teams (Univ. Paris Descartes / UJF Grenoble):
F. Taddei, E. Stewart, A. Demarez, A. Lindner, G. Paul, M.-F. Bredèche
D. Schneider, E. Coursange

Application: please contact Lionel Moisan (moisan@math-info.univ-paris5.fr)

Deadline for application: June 30th, 2008