JOB DESCRIPTION

Job Title: Automatic extraction of complex spatial biological patterns from histopathological images for the evaluation of the predictive potential of the inflammatory microenvironment in the context of hereditary breast cancer

Job Summary:
(English, max 1000 characters)
Postdoc position in data mining and medical image analysis in the ICube laboratory (Strasbourg, France) and MIPS laboratory (Mulhouse, France).
The candidate should hold a PhD in computer science and have excellent knowledge of the English language.
Demonstrated experience in Matlab or Java programming will be considered as an advantage.
Salary: between 2671.62€ and 3868.47€ (monthly gross) depending on the experience of the candidate.

Job Description :
(*English, detailed information – max 3000 characters*)
The Engineering science, computer science and imaging laboratory (ICube), associated with the Modelling, Intelligence, Process and Systems Laboratory (MIPS), opens a postdoctoral position for a computer scientist, in the field of data mining and histopathological whole slide images analysis, with a duration of 18 months and monthly gross salary around 3000€ (depending on the experience of the candidate).
The appointee will further develop a clustering system based on previous work of the team in breast cancer, to detect new patterns of immune infiltration focused on lymphocytic lobulitis (LLO) in hereditary breast cancer (hBC). The aim is to correlate recurrent patterns of immune cell infiltration and their spatial context with lobular structures with the underlying genomic aberrations (BRCA1, BRCA2, other mutations). These new patterns will be extracted through an innovative data mining and image analysis process. It will be driven by formalized expert knowledge to reduce the user involvement during the analysis, and based on new object-oriented image segmentation and classification algorithms and new metrics describing the spatial relations between the objects of interest. For this, two main objectives are: (1) to propose new approaches for the extraction of quantitative features from image contents and coarse image classification for determining basic regions of interest (e.g. cells, fiber structure, lymphocytes) using deep learning frameworks that have proven their efficiency in such problems; (2) to identify complex spatial biological patterns by integrating a priori biological knowledge from experts into image analysis procedures to recognize biological meta-structures
This work will consolidate the existing Franco-German partnership between ICube and MIPS laboratories (Strasbourg and Mulhouse, France) and the Hannover Medical School (Hannover, Germany). The postdoctoral fellow will integrate the multidisciplinary team of the Sysimit project (Systems Immunology and Image Mining in Translational Tissue Biomarker Research: Mining the spatial patterns of adaptive immune responses to persisting tissue antigens to exploit the full predictive potential of protocol biopsies in transplantation and cancer research) and will work in collaboration with the MHH pathologists and the mathematicians of the University of Braunschweig (Germany). Regular exchanges will take place either by videoconference or during stays in their structures, to benefit from their expertise.
Within the ICube laboratory, the postdoctoral researcher will be integrated into the Data and Knowledge Science team under the supervision of Cédric Wemmert and co-supervised by Germain Forestier (MIPS).

Main research field :
Computer science / Medical sciences

JOB DETAIL

Type of contract : Temporary
Status : Full-time
Company / Institute : Université de Strasbourg
Country : France
City : Strasbourg
Postal Code : 67000
Street : 4 rue Blaise Pascal

APPLICATION DETAILS (mandatory)

Provisional start date : between 01/06/2017 and 01/01/2018
Application deadline : 30/11/2017
Application e-mail : wemmert@unistra.fr ; germain.forestier@uha.fr