

## Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website [www-csc.utt.fr](http://www-csc.utt.fr))

Supervisor's name :  Given names :

Status (prof., assistant prof., ...) :

Laboratory :  Website address :

Institution :  Website address :

Scientific competence of the supervisor:

A. Hafiane is Associate Professor at INSA Centre Val de Loire and member of Image and Vision group in Prisme lab. His research interest include theory and methods of image processing, computer vision and machine learning, particularly for biomedical and robotic applications. He developed several methods and approaches for biomedical image analysis using robust descriptors, segmentation, and machine learning algorithms. Many of these methods have been successfully applied in many research projects.

Two major publications in the field proposed for the PhD :

1.
2.

Website address of the personal page :

**Supervisor's email :**

**Description of the research work proposed for a PhD** **Topic # (see list) :**

Title :

Subject :

The analysis of medical ultrasound images is an important field of research. Although there has been extensive research development for medical image analysis, it is still an open problem that requires more investigation. Ultrasound imaging modality is associated with poor visual properties, artefacts, speckle, shadows, signal dropout, ect. This is confronted with very challenging problems such as the tissues analysis, machine learning with noisy data, variability in anatomic structures, tracking in weak visualisation conditions... Recently machine learning particularly deep learning approach has shown impressive performance in solving many computer vision problems. However, this approach has revealed several limitations in biomedical images due to the lack of large labelled dataset, the specific imaging modalities... Dynamic information could be a key solution to many medical image analysis problems, particularly in the case of ultrasound imaging. Very few works have focused on machine learning dynamic models to extract relevant information in ultrasound images. The PhD objectives is to design and develop robust methods to locate, analyse and track anatomic structures such as nerves, vessels ... Dynamic information will be incorporated through hybrid deep learning models. Also using online learning approach to build adaptive models for detection and tracking.

Keywords :

Expected collaborations :

Background required from the applicant :

Existence of a PDF file detailing the proposal ("yes" or "no") :

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