UNIVERSITY COLLEGE LONDON

Job Description and Person Specification

Job Title: Research Associate / Senior Research Associate in Real-time Interventional Image Computing and Clinical Integration for Endoscopic Fetal Surgery

Department: Medical Physics and Biomedical Engineering

Reports to: Dr. Tom Vercauteren

Responsible to: Prof. Sebastien Ourselin (Project Lead, CMIC), Prof. Jem Hebden (HoD of MPBE)

Duration: 2 years funded by the Wellcome Trust / EPSRC

Salary: UCL Grade 7, £33,353 - £40,313; Grade 8 £41,430 - £48,873 per annum inclusive of London Allowance

Project Title: Image-Guided Intrauterine Minimally Invasive Fetal Diagnosis and Therapy

This is an exciting opportunity for an enthusiastic researcher with skills in real-time image computing and software development to join an internationally leading university research group. The aim of the project is to have an active role in the development, integration and translation of a novel platform for fetal surgery.

Main Purpose of the Post:

UCL was awarded, in 2014, £10 million to develop better tools and imaging techniques that will improve the success of surgery and other therapies on unborn babies in collaboration with KU Leuven, Great Ormond Street Hospital and University College London Hospital (See the GIFT-Surg project website for more detail www.gift-surg.ac.uk).

We are seeking a post-doctoral research associate to work real-time image computing and clinical integration in the context of endoscopic fetal surgery. An important aspect of the project is to extract information from the fetoscopic video stream and display informative data to the surgeon during the procedure. To that end, the candidate will work on novel real-time image computing algorithms and visualisation tools for surgical guidance. A strong emphasis will be put on computationally efficient algorithms and robust software development.

Within the large GIFT-Surg project, a number of researchers are developing complementary, interrelated algorithms, imaging devices and surgical tools that will provide unprecedented capabilities for fetal surgery. Within the real-time image computing task, an important consideration is therefore given to integrate the developed techniques into the GIFT-Surg unified software and hardware platform.

The project is ambitious and widely scoped and therefore there will be exciting opportunities to link interventional image computing and visualization to novel imaging devices developments, to surgical planning and manual or robotic surgical navigation.

Duties and Responsibilities:

- To undertake research as stated in the Main Purpose.
- To play an active role in the GIFT-Surg project group, the UCL Centre for Medical Image Computing (CMIC) and the UCL Translational Imaging Group (TIG), contributing to meetings and overall activities.
- To prepare and present findings of research activity to colleagues, interested parties and at appropriate conferences.
- To contribute in establishing work milestones, meeting the corresponding deadlines or alerting line management in case of unforeseen delays / difficulties
- To help and support submission of research grant proposals.
- To contribute to the drafting and submitting of papers to appropriate peer reviewed journals.
- To participate in departmental and faculty seminars aimed at sharing research outcomes and building interdisciplinary collaboration within and outside the department.
- To assist with the supervision and teaching of MSc and PhD students within the group as requested.
- To carry out any other duties as are within the scope, spirit and purpose of the post.
- To actively follow UCL policies including equal opportunities and race equality policies.
- To maintain awareness and observation of fire and health and safety regulations.
- To maintain an awareness and observation of ethical rules and legislation governing the storage of medical data.
- To maintain an awareness and observation of confidentiality agreements with collaborators and external organizations.
- To maintain an awareness and observation of appropriate procedures for the disclosure and protection of inventions and other intellectual property generated as part of the post holder's activities and those of other team members working within the project.

As duties and responsibilities change the job description will be reviewed and amended in consultation with the post holder.

Person Specification: Research Associate in Surgical Vision and Surgical Skill Analysis for Fetal Surgery

	Essential	Desirable
Knowledge, Education, Qualifications and Training		
Upper Second Honours degree (or equivalent) in Physics, Maths, Computer Science, Engineering or comparable subject.	***	
PhD in computer vision, medical image computing, biomedical engineering, or a comparable subject.	***	
Skills and/or Abilities		
Strong mathematical abilities	***	
Strong problem solving abilities	***	
Strong expertise in programming high-level languages (e.g. C/C++, python, Matlab)	***	
Specialised in **at least two** of the following areas: • Real-time computer vision • Medical image computing • Use of image computing / machine learning libraries and tools (ITK, scikit-learn, OpenCV, etc.) • Machine Learning • GPGPU development (CUDA / OpenCL) • Data visualisation	***	
Ability to present results publicly in poster and platform presentations.	***	
Ability to work independently.	***	
Ability to work effectively within a collaborative environment.	***	
Excellent written and spoken communication	***	

skills in English		
Good understanding of the physics of acquisition of medical imaging (ultrasound, MRI, etc.)		***
Experience		
Practical experience in high-performance image computing.	***	
Experience in working on commercial or large-scale software systems following modern system development methodologies.		***
Established peer-reviewed publication track record	***	
Demonstrable experience of developing medical image computing algorithms in collaboration with clinicians		***