**UNIVERSITY COLLEGE LONDON**

**Job Description and Person Specification**

**Job Title**: Software Engineer (Senior / Research Associate): Fetal Interventions Platform.

**Department**: Medical Physics and Bioengineering

**Reports to**: Dr. Tom Vercauteren

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

**Duration**: 3 years in the first instance funded by the Wellcome Trust and EPSRC

**Salary:** UCL Grade 7, £32,699 - £39,523; Grade 8 £40,618 - £47,915 per annum inclusive of London Allowance.

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

**Main Purpose of the Post:**

UCL was recently awarded £10million 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.

We are seeking a software engineer to develop and structure a novel surgical platform that will provide unprecedented capabilities for fetal surgery. Within this widely scoped project, a number of researchers will design new algorithms for therapy planning, image-guidance and surgical vision as well as new imaging instruments and surgical tools. To support this endeavour, the successful candidate will play a key role in integrating the new software building blocks together with the existing software available within clinically usable software applications and ensuring the scalability of the entire software platform.

The objective of the project is to go from research to first in person clinical trial. The successful candidate will work closely with other project members assisting them in designing a robust software architecture and ensuring that proper software methodologies are being followed within the group (e.g. documentation, coding standards, continuous integration, etc.), for maintaining and adapting the available software and cross-platform build environment as well as contributing to the development of user interfaces.

**Duties and Responsibilities:**

* To undertake research as stated in the Main Purpose.
* To play an active role in the Fetal Project Group and the Translational Imaging Group, contributing to meetings and overall activities.
* To prepare and present findings of research activity to colleagues, interested parties and at appropriate conferences.
* To help and support the 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;

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

**Person Specification:** Software Engineer (Senior / Research Associate): Fetal Interventions Platform.

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|  | **Essential** | **Desirable** |
| **Knowledge, Education, Qualifications**  **and Training**  Upper Second Honours degree (or equivalent) in Physics, Computer Science, Biomedical Engineering, or a closely related discipline.  PhD in Medical Imaging, Computer Science or a closely related subject or equivalent industry experience. | \*\*\*  \*\*\* |  |
| **Skills and/or Abilities**  Strong expertise in object-oriented software development in C++ and Python  Ability to leverage C++11  Ability to propose and apply design patterns methodologies for new developments and refactoring endeavours  Proficient in software development methodologies (unit testing, coding standards, continuous integration, code coverage improvement, static analysis)  Ability to work in cross-platform environments (Mac OS, Linux, Windows, 32/64 bits setups) with various compilers (e.g. clang, icc, gcc, Visual C++)  Knowledge of GPU development tools (e.g. CUDA, OpenCL)  Proficient in documenting code using standard tools (e.g. doxygen, user manuals)  Strong mathematical abilities.  Strong problem solving abilities.  Ability to present results publicly in poster and platform presentations.  Ability to work effectively within a collaborative environment  Ability to work independently.  Knowledge in MATLAB programming  Excellent written and spoken communication skills in English | \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\* | \*\*\*  \*\*\*  \*\*\* |
| **Experience**  Practical experience of algorithm and cross-platform software development for medical image computing, digital image processing and/or computer vision  Experience of publishing high quality research results.  Established publication track record.  Practical experience with high-level libraries, e.g. STL, Boost, Qt.  Development and use of medical image computing and/or computer vision libraries, e.g. ITK, VTK, NiftyReg, NiftySeg, FSL, SPM, IGSTK, OpenCV.  Experience with the following tools:   * CMake * CDash * CPack * Valgrind * Git   Experience with parallel computing developments (e.g. C++11 threads, ITBB, OpenMP, CUDA, OpenCL)  Experience in working on commercial or large-scale software systems following modern system development methodologies.  Experience with Good Manufacturing Principles (GMP) for clinical software development  Experience of supervising PhD or MSc students. | \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\*  \*\*\* | \*\*\*  \*\*\*  \*\*\* |
| **Other requirements**  Strong interest in medical image computing and the application of imaging technology to solving medical problems | \*\*\* |  |