1 About the Opportunity

Two Chancellor's Scholarships are available at London South Bank University (LSBU). These positions offer a **full tuition fee waiver for 4 years (48 months)**, including the final write-up year, starting **January 2026**.

The successful candidates will be based in the School of Computer Science and Digital Technologies, within the College of Technology and Environment (CTE), and will join the Bioscience and Bioengineering (BISBE) University Research Centre.

They will work under the supervision of Dr. Jiaqiu Wang, senior lecturer at the School of Computer Science and Digital Technologies, College of Technology and Environment, whose research group has extensive experience and a strong track record of impactful research in biomedical image analysis and computational biomechanical modelling.

Please note that the scholarship does NOT cover stipends or living expenses. However, successful candidates will be encouraged and supported in applying for external funding opportunities to help cover living costs during their studies.

2 Available Projects

We are seeking highly motivated research students to work on the following projects (See LSBU website for more information). Two PhD projects are available as part of this opportunity (please remeber to indicate the preferred project in the application by quoting the corresponding **project number**):

(PROJECT 01) Image-based Deformation Tracking and Strain Analysis in Heart Disease Diagnosis
[Project Reference: CTE_BBRC_Jiaqiu_001_25_26]

- **Project Overview**
  Atrial fibrillation (AF) is the most prevalent cardiac arrhythmia, affecting over 2.4% of the population in England and substantially increasing the risk of stroke. The associated economic burden on the NHS is significant, estimated between £1.4 and £2.5 billion annually. Early and accurate diagnosis is critical for effective management; however, current diagnostic methods lack the precision required to evaluate the heart's biomechanical properties, thereby limiting clinical decision-making.
  This research introduces an innovative image-based biomechanical analysis method that integrates Digital Volume Correlation (DVC), optical flow (OF) algorithms and artificial intelligence (AI) models with four-dimensional cardiac computed tomography (4D-CT) imaging. The high spatial and temporal resolution of 4D-CT enables detailed assessment of atrial morphology, making it an optimal platform for motion tracking. While the conventional DVC/OF has been widely validated in engineering contexts for 3D full-field deformation tracking, its clinical application remains constrained by limitations in image quality and computational efficiency.
  The proposed methodology aims to deliver a non-invasive, high-precision tool for the early diagnosis and risk stratification of AF. Beyond AF, the approach holds translational potential in other clinical domains, including cancer imaging and bone tissue regeneration, highlighting its versatility and broad applicability. This research ultimately seeks to advance the integration of biomechanics into clinical practice, with the potential to transform medical imaging and improve healthcare outcomes.
- **Candidates Requirements**
  - Previous research experience in computational modelling, computer vision, imaging analysis, and machine learning is essential.
  - Strong theoretical knowledge in mathematics and signal processing, along with practical programming skills, is required.
  - A strong background in biomedical engineering, mechanical engineering, or applied mathematics is highly desirable.

(PROJECT 02) AI-assisted Multi-modal Image Analysis for Early Detection of Cardiovascular Diseases
[Project Reference: CTE_BBRC_Jiaqiu_002_25_26]

- **Project Overview**
  Cardiovascular diseases (CVDs) remain the leading cause of mortality globally. Traditional diagnostic approaches often rely on invasive procedures or manual interpretation of medical images, which can be time-consuming and susceptible to human error. The integration of artificial intelligence (AI) with medical imaging and clinical data presents a transformative opportunity to improve the accuracy, efficiency, and automation of early CVD diagnosis.
  This PhD project aims to develop an AI-assisted image analysis framework for the early detection of CVDs using a multi-modal dataset. The dataset will integrate demographic information (e.g., age, sex), multiple imaging modalities (including echocardiography, cardiac MRI, and CT angiography), and structured clinical data (such as medical history and treatment plans). By combining structured clinical records with unstructured imaging data, the project will build a comprehensive AI model capable of identifying early biomarkers, predicting disease progression, and supporting clinical risk stratification.
  Model development and validation will be conducted using real-world clinical datasets, with direct input from clinical experts throughout the research process. The expected outcome is the creation of an AI-driven clinical decision support system that reduces diagnostic workload, enhances diagnostic precision, and facilitates timely interventions for patients.
  The ideal candidate will have a background in machine learning, deep learning, and medical image analysis, with proficiency in Python and frameworks such as TensorFlow or PyTorch. Experience with MATLAB and medical image processing is also desirable. Candidates with a biomedical engineering background and foundational medical knowledge are particularly encouraged to apply.
- **Candidates Requirements**
  - Previous research experience in medical image analysis, machine learning, and data science is essential.
  - Experience in finite element analysis (FEA) and computational fluid dynamics (CFD), particularly applied to biomechanics, is highly desirable.
  - Strong background in mathematics- or physics-constrained algorithms and computational biomechanical modelling would be advantageous.

3 Selection Criteria

- Open to any UK or international candidates. Starting in **January 2026**.
- The candidate must meet the minimum entry requirements for our PhD programme by clicking the Apply link.
- *Academic Qualifications*: You should normally have at least a 2.1 honours degree from a UK University or an equivalent qualification in engineering, computer science, etc.
- *Research and Analytical Skills*: Ability to research subjects using libraries, the internet, and other information resources, ability to conduct comprehensive literature reviews, experience in qualitative and quantitative data collection and analysis, strong research design and methodology skills, ability to independently collaborate with stakeholders, and excellent academic writing and communication skills.
- *Professional Skills*: Project management and organisational skills, ability to work independently and as part of a team, problem-solving and critical thinking skills, and adaptability and willingness to learn new skills.
- *Software and Modelling Experience*: Experience developing and utilising spreadsheet-based models (e.g., Microsoft Excel) to an advanced level. Experience with other software packages relevant to the discipline would be an advantage.
- *Communication Skills*: The candidate should be highly motivated, able to collaborate, have good visual, oral, and written communication skills, and communicate the work's outcomes to commercial, industrial, and scientific audiences.
- *Teamwork and Collaboration*: Ability to work with industrial and academic supervisors.
- *Language Proficiency*: Overseas applicants must have a minimum English language IELTS score of **6.5**, with at least **5.5** in any of the components.
- *Understanding of Equality and Diversity*: Able to demonstrate an understanding of equality and diversity and their practical applications.

- *Visa and Legal Requirements*: Non-EU/EEA nationals may need to apply to the Foreign and Commonwealth Office (FCO) for clearance from the Academic Technology Approval Scheme (ATAS).

4 How to Apply

Due to the high volume of applications, the Admissions Team requires that all applications—including supporting documents—be submitted via the online application portal:

https://www.lsbu.ac.uk/study/course-finder/computing-science-informatics-phd#apply

Important Reminders

1. **Submit all required materials via the portal.** Ensure that you include a research proposal tailored to the selected project. The proposal should clearly outline your background, skills, and relevance to the chosen topic, as it will be the primary basis for shortlisting and interview selection.

2. **Quote the project reference number in your application.** Use either **CTE_BBRC_Jiaqiu_001_25_26** or **CTE_BBRC_Jiaqiu_002_25_26**, depending on your chosen project. Applications submitted without a project reference number cannot be processed properly.

3. **Ensure that your application is complete.** The following documents are required for consideration:

   - Research proposal
   - Personal statement
   - Curriculum Vitae (CV)
   - Academic qualifications
   - Evidence of English language proficiency (if applicable)
   - Any other relevant supporting documents

4. **Confirm submission.** Once your application has been submitted online, please email the principal supervisor, Dr. Jiaqiu Wang through email: jiaqiu.wang@lsbu.ac.uk.

   Please add a tag '**[PhD Application]**' at the beginning of the email subject line to facilitate easier filtering. This will allow us to follow up with the Admissions Team and ensure your application is properly tracked.