Utilising Computational Modelling to Help Understand Cerebral Aneurysm Progression

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Research Centre or Department: Materials Engineering Research Institute

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Project summary

This research aims to adapt and apply a recently developed computational fluid dynamics (CFD) model to investigate how the shape and structure of cerebral aneurysms (CAs) affect local fluid dynamics, ultimately influencing their growth and rupture. The aim of this project is to lay the groundwork for tailored CFD codes, contributing to a growing library of novel biomedical-focused codes developed in-house at SHU. The outcomes will enrich a collaborative, multi-disciplinary research group involving Sheffield Hallam University and the University of Sheffield.

It is desired that the candidate will have the following skills/ experience:

- Some experience in coding (in any language).
- Experience in analysing and manipulating data.
- An appropriate level of fluid dynamics understanding.
- Good project management skills.
- Experience explaining and presenting technical data.

The skills that the candidate will gain from this project are:

- Enhancing their coding skills.
- Data analysis techniques.
- Utilising high performance computing.
- Exposure to working in a research team.
- Experience applying modelling skills to biomedical applications.

This research aligns with a broader investigation into multi-scale computational modelling of biomedical flows, particularly focusing on stented arteries. Collaboration spans across multiple departments, SHU researchers, and external partners. Moreover, the results are expected to bolster forthcoming EPSRC grant applications.

Specific skills and experience required for this project

Please also refer to the advert on our jobs pages for the person specification for these internships

- Currently enrolled on or recently finished a BSc in engineering, mathematics, or physics. Other, relevant degrees will also be considered.
- Some familiarity with coding (any language).
- Experience in analysing and manipulating data.
- An appropriate level of fluid dynamics understanding.
- Good project management skills.
- Experience explaining and presenting technical data.
- Ability to clearly document their procedure and work throughout the project.

Project location

City Campus

Home working may be available

Project delivery

The project would ideally be carried out on a full-time basis for 6 weeks.

However, there is flexibility to discuss part time working.

In addition, hybrid/ remote working options are available and can be discussed.