StudentShapers Recruitment: Calling all students with an interest in Earth Science, Coding, and Virtual Reality

ViRSE – Seeing what lies beneath- seismic reflection imaging and VR

## Bursary:

£365/week (8 full time weeks) – for one student.

Who should apply:

Students with an aptitude for coding and enthusiasm for creating software, as well as an understanding of seismic reflection imaging. We anticipate that students enrolled on programmes in the Department of Earth Science and Engineering will be best placed to meet these criteria, but all Imperial undergraduates are eligible. Preference will be given to students who are not in their final year.

Campus/Location: *South Kensington; some work can be done remotely, but on campus attendance will be expected for at least 50% of the project.*

Project details:

This is an opportunity to develop a three-dimensional 'seismic cave' for use in virtual-reality teaching within the Department of Earth Science and Engineering. You will be working in partnership with Dr Rebecca Bell (ESE) and Dr Mark Sutton (ESE) to design, code and test a system to model and visualise 3D seismic reflection data. The system will need to generate vertical cross-sections (inlines and xlines), depth/time horizontal slices through reflectivity and other attribute volumes. The goal is for this system to form the core of an interactive virtual reality application in which students can become immersed in a 3D seismic cube and travel through it as if they were walking through a cave system underground. The hydrocarbon industry have used expensive 'VR caves' to train their employees for many years- realising that immersion in these data cubes is the best way to appreciate the details they contain. In this project we aim to bring this technology to the classroom and develop activities for teams of students such as exploring the seismic volume and identifying and interpreting suitable sites for wind turbine installation or Carbon capture and underground storage.
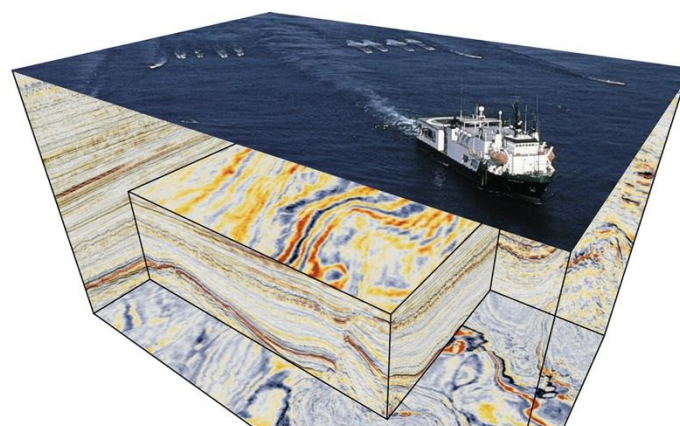
3D seismic data showing vertical cross-sections and horizontal slices.
https://www.iris.edu/gallery3/var/albums/ research/lrsp/SB13.jpg?m=1400096100

The student undertaking this engagement will gain a deeper understanding of seismic reflection data, as well as gaining technical skills and experience in coding (in C#/Unity), and in three-dimensional visualisation. They will also gain experience in collaborative software-development as part of a professional team.

This engagement is part of the ViRSE (Virtual Reality Student Experience) project, which is developing a virtual reality platform to ease the development and deployment of 'multi-player' virtual reality into Imperial's teaching across a range of departments and subjects. ViRSE is built on the Unity game engine, and all ViRSE applications (including this project) are also built within Unity; code is written in the C# programming language. Students will not need to build a VR interface, write rendering code, or concern themselves with networking or administrative issues; these are handled by the ViRSE

framework and the Unity engine. The development in this engagement will concentrate on the creation of a three-dimensional 'environment' specific to the project, and creating and testing the code necessary to make it function, and to interface with the ViRSE system.

All ViRSE student shaper engagements will commence with a two-week full time training course , which will provide the necessary grounding in the C# language, object-oriented programming, the Unity engine, the ViRSE platform, and 3D modelling tools. This course will take place on-campus July 3rd-14th 2023. In subsequent six project weeks the ViRSE student partners will lead on the development of the particular applications within Unity, in collaboration with the academic lead, and with the ViRSE team providing technical support and advice. These six project-development weeks are flexible in precise timing, but should take place over summer 2023, before the start of Autumn term of the 23/24 academic year.

How to apply:

Applications (300-500 words) should be made via the 'Student Expression of Interest' form on the StudentShapers website ([here](#)) or accessed using the above QR code. This will then be distributed directly to the appropriate staff partner.

Deadline: *31st March 2023*

Contact details: *Contact Dr Rebecca Bell (Earth Science & Engineering), rebecca.bell@imperial.ac.uk for further information*