

## StudentShapers Recruitment: Calling all students with an interest in Past Ecosystems, Palaeontology, Coding, and Virtual Reality

### *ViRSE – Palaeoworlds (time-travel dioramas)*

#### 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 basic landscape reconstruction (within a geological and palaeontological context). 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:

*An in-depth understanding of past landscapes at key time periods within Earth's history is fundamental for understanding the fossil record and evolution of life. These environments are highly dynamic and changeable over geological time, making it challenging for people to grasp the enormity and rates of change seen from the palaeobiological perspective when only taught from static texts and illustrations (see Fig.1). This project will build a 3D world (or worlds) representing 'living' dioramas of the geological past, packed with representational of extinct creatures and plants all set within realistic landscapes for the geological periods in question. By time-traveling to different periods in Earth's history and interacting with the surrounds and exploring individually or in groups (during teaching and/or outreach session), individuals will be able to take 'field trips to the past'. The aim of this immersive experience is to provide the participants with better understanding of the biological, geological, and environmental factors that have shaped the world as we know it today. For a student teaching perspective this project will help contextualise the physical specimens (fossil animals/plants) used in our current teaching within our current understanding of their ancient landscapes. For this project, we will focus on a subset of Palaeozoic time periods (e.g., Ordovician to Carboniferous) as it was in these periods that complex life emerged from the sea and colonised the land for the first time.*

*The student undertaking this engagement will gain a deeper understanding of Earth's past environments, including some of the key events in life history that led to plants and animals colonizing the land, 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#*



Figure 1 - Traditional 2D diorama from the Botanic Gardens of Smith College (Northampton) showing the early Devonian (ca. 400 million years ago) landscape and ecosystem... imagine if this was in 3D and you could explore it!

# STUDENTSHAPERS

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:** 31<sup>st</sup> March 2023

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