Title: MyWorld: Intelligent Underwater Scene Representation

**Type of award**  PhD Research Studentship

**Department**  Electrical and Electronic Engineering, Visual Information Laboratory

**Scholarship Details**  Minimum £18,662 p.a. in 2023/24

**Duration**  3 years

**Eligibility**  Home (UK) and EU citizens who have confirmation of UK settlement or pre-settlement status under the EU Settlement Scheme

**Start Date**  Available now

**PhD Topic Background/Description**

Three-dimensional (3D) reconstructions obtained from image sequences are increasingly important as a means of enhancing our understanding of underwater organisms, objects, damage, and seabed structure. However, current solutions cannot yet provide high resolution or sufficient detail without months of human and compute resources. This is mainly due to the sparsity of data and the computational complexity of the algorithms employed - processing of underwater sequences is extremely challenging due to environmental distortions, light backscatter, and turbidity conditions. The aim of this project is to address these challenges through the creation of a new AI-enabled framework for image quality enhancement and high-resolution 3D scene representation. More specifically, the project will create a high-resolution 3D representation of an underwater scene, containing seabed and objects of interest. The 3D scene will be modelled accurately and directly from raw underwater data using well-defined prior knowledge. We will combine real-time visual SLAM and sparse radiance fields hierarchically, trained with a novel loss function developed from prior knowledge of the underwater environment. This will improve the quality of the 3D representation and offer more efficient and flexible workflows.

Launched in April 2021, MyWorld is a brand-new five-year programme, the flagship for the UK’s creative technology sector, and is part of a UK-wide exploration into devolved research and development funding ([UKRI video](https://www.youtube.com/watch?v=example)). Led by the University of Bristol, MyWorld will position the South West as an international trailblazer in screen-based media. This £46m programme will bring together 30 partners from Bristol and Bath’s creative technologies sector and world-leading academic institutions, to create a unique cross-sector consortium. MyWorld will forge dynamic collaborations to progress technological innovation, deliver creative excellence, establish, and operate state of the art facilities, offer skills training, and drive inward investment, raising the region’s profile on the global stage.


**Candidate Requirements**

Applicants must hold/achieve a minimum of a master’s degree (or international equivalent) in a relevant discipline. Applicants without a master’s qualification may be considered on an exceptional basis, provided they hold a first-class undergraduate degree. Please note, acceptance will also depend on evidence of readiness to pursue a research degree.
If English is not your first language, you need to meet this profile level:
Profile E
Further information about English language requirements and profile levels.

**Basic skills and knowledge required**
**Essential:** Excellent analytical skills and experimental acumen.
**Desirable:** A background understanding in one or more of the following:
- Image processing / Computer Vision
- Artificial intelligence/Machine learning/Deep learning
- Computational Imaging and Photography

**Scholarship Details**
Stipend at the UKRI minimum stipend level will also cover tuition fees at the UK student rate. Funding is subject to eligibility status and confirmation of award.

To be treated as a home student, candidates must meet one of these criteria:
- be a UK national (meeting residency requirements)
- have settled status
- have pre-settled status (meeting residency requirements)
- have indefinite leave to remain or enter.

**Application Process**
- All candidates should submit a full CV and covering letter to myworldrecruitment@myworld-creates.com (FAO: Dr Pui Anantrasirichai) by the deadline.
- Formal applications for PhD are not essential at this stage, but can be submitted via the University of Bristol homepage (clearly marked as MyWorld funded): [https://www.bristol.ac.uk/study/postgraduate/apply/](https://www.bristol.ac.uk/study/postgraduate/apply/)
- A Selection Panel will be established to review all applications and to conduct interviews of short-listed candidates.
- Candidates will be invited to give a presentation prior to their formal interview, as part of the final selection process. It is expected that the shortlisting selection process will commence 7 December 2023, with interviews to follow.
- The initial closing date for applications is 30 November 2023. The positions will however remain available until all scholarships are awarded.

For questions about eligibility and the application process please contact Engineering Postgraduate Admissions admissions-engpgr@bristol.ac.uk