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## **MagicBathy - Multimodal multitAsk learningG for MultIsCale BATHYmetric mapping in shallow waters - EU Project started**

**MagicBathy** is a research project funded by the European Commission for the period 2023-2025. It is funded under the **HORIZON Europe MSCA Postdoctoral Fellowships - European Fellowships (GA 101063294)** and it is hosted by the [Remote Sensing and Image Analysis Group](#) at the [Faculty of Electrical Engineering and Computer Science, Technische Universität Berlin](#), Germany. A secondment will also take place at the [Visual Recognition Group](#) of [Czech technical university in Prague](#), Czech Republic.

Started on the 1<sup>st</sup> of February 2023, MagicBathy will establish an advanced deep learning framework for low-cost shallow water mapping by developing a novel boundary-aware multitask, multiscale and multimodal learning approach for bathymetry and semantics together, exploiting single either UAV or satellite imagery.

Accurate, detailed and high-frequent bathymetry, coupled with the important visual and semantic information, is crucial for the under-mapped shallow coastal areas being affected by intense climatological and anthropogenic pressures. Regular UAV and satellite imagery have the potential to frequently and consistently map those areas to different extents and detail, providing ground breaking key information. However, optical properties of water severely affect images and refraction is the main factor affecting their geometry. Current Structure from Motion (SfM) based solutions for refraction correction are slow and costly. Satellite Derived Bathymetry (SDB) methods deliver faster results over huge shallow areas albeit in lower spatial resolution, failing to handle non-homogeneous seabed. Recent methods based on Convolutional Neural Networks (CNNs) are mostly dedicated to satellite images, failing to address the challenges of shallow waters, being also inefficient for UAV images, preventing higher resolution results. MagicBathy will establish an advanced deep learning framework for low-cost shallow water mapping. Frameworks, models and results will be published in open access, enabling the rapid progress in shallow water mapping worldwide.

For more information about this topic, please contact Dr. Panagiotis Agrafiotis at [agrafiotis@tu-berlin.de](mailto:agrafiotis@tu-berlin.de) or visit [www.magicbathy.eu](http://www.magicbathy.eu).