The use of the A.I. for biodiversity studies in the deep sea

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Faced by the rapid increase of anthropogenic pressures on deep-sea ecosystems, the scientific community has to cope with the growing need for monitoring biodiversity (increasing spatial scale and frequency) together with the possibility to apply fast and accurate impact assessments. The development of mobile (ROVs, AUVs) and fixed (deep-sea observatories) platforms support long-term and large scale observations of the seafloor. Compound with recent advances in remote and *in situ* imaging sensors for acquiring images and videos from deep-sea ecosystems, they allow creating massive records of data from micro-organisms up to complex communities. Processing these huge amounts of data is very challenging. Computer-based classification tools open up new perspectives for using automatic imaging methods and artificial intelligence (AI) for diversity studies in the deep sea by processing samples at speeds unseen before. Inspired by medical research, the use of machine- and deep-learning methods will enable fast and sophisticated analysis of (visual) data for biodiversity studies. This special session will provide opportunities for sharing advances and insights in this field but also to discuss bottleneck problems in information extraction using these cutting-edge techniques in the framework of deep-sea biodiversity studies.