ABSTRACT:

Photo identification is an essential method to identify cetaceans, by using natural marks over their body, and allows experts to acquire straightforward information on these animals. The importance of cetaceans lies in the fact that they play a crucial role in maintaining the healthiness of marine ecosystems, however they are exposed to several anthropogenic stressors, under which they could collapse with extreme consequences on the marine ecosystem functioning. Hence, obtaining new knowledge on their status is extremely urgent for the marine biodiversity conservation. The smart use of technology to automate the individual recognition can speed up the photo identification process, opening the door to large-scale studies that are manually unfeasible. We performed a systematic review on systems based on machine learning and statistical methods for cetacean photo identification, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. This review highlights that interest has been increasing in recent years and several intelligent systems have been presented. However, there are still some open questions, and further efforts to develop more effective automated systems for cetacean photo identification are recommended.