Advanced Machine Learning Methodologies for
Underwater Image and Video Processing and Analysis

Underwater image and video as the information carrier are important for ocean engineering. Due to the complex and uncontrollable underwater imaging conditions, the images and videos taken under water commonly suffer from the effects of quality degradations such as low contrast and brightness, color deviations, blurry details, nonuniform bright speck, etc. These degradations not only affect the experience of human perception but also pose a challenge to the usage of underwater images and videos in ocean engineering. Despite the progress in underwater image and video processing and analysis, the related methodologies remain largely unsatisfactory. Besides, it is difficult to achieve good performance by directly transplanting existing in-air methodologies into underwater scenarios due to the unique characteristics of underwater imaging, such as light selective absorption and scattering. Therefore, there is a pressing demand for novel theories, methodologies, and applications for underwater image and video processing and analysis. The recent progress in advanced machine learning methodologies offers new opportunities and brings novel and insightful enlightenment to address the issues of underwater images and videos. This special issue aims at promoting cutting-edge research related to the theories, methodologies, and applications for underwater image and video processing and analysis based on advanced machine learning technologies and offers a timely collection of papers to benefit researchers. The main topics of include, but are not limited to:

➢ Machine learning-based underwater image and video enhancement and restoration
➢ Machine learning-based underwater image and video quality assessment methods, including full-reference assessment metrics, non-reference assessment metrics, etc.
➢ Machine learning-based underwater image and video compression, coding, representation, transformation, etc.
➢ Machine learning-based underwater image and video synthesis and generation.
➢ Machine learning-based underwater image and video depth estimation.
➢ Machine learning-based underwater image and video application and analysis, including underwater object detection, underwater object recognition, underwater object tracking, underwater image and video segmentation, underwater scene understanding, underwater machine vision, underwater 3D modeling, etc.

Important Dates:

November 30, 2021: Manuscripts submitted before this date will be considered for publication in this special issue.
All manuscripts must be submitted via the Journal's website: https://joe.msubmit.net   and should follow submission guidelines from the "Information for Authors" page.

Authors should include a cover letter indicating that their paper is intended for the "Advanced Machine Learning Methodologies" (AMLM) special issue.

April 2023: Target date for Special Issue publication

Papers accepted for publication in the Journal are posted on IEEE Xplore as soon as the final galley proofs are approved, thus becoming downloadable and citable before appearing in the print version of the Journal.

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