Literature Reference Sheet

- F. Maurelli, S. Krupinski, A. Pascoal, N. Miskovic, K. Kyriakopolous, P. Ridao, M. Kruusmaa, R. Bachmayer, "**IMPACT: a strategic partnership for sustainable development in marine systems and robotics**" *2020 IEEE / ITU International Conference on Artificial Intelligence for Good (AI4G)*, Geneva, Switzerland, 2020, pp. 107-113. [virtual]
  doi: 10.1109/AI4G50087.2020.9311023
  Abstract: The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. All sectors of the society need to be involved in order to achieve those goals. This paper represents an initiative among several universities to explicitly look at the UN SDGs from the higher education perspective, in the field of marine systems and robotics, fostering self-reflection, developing specific actions addressing several goals. Currently half-way in the project life, the preliminary results and the activities performed up to now are very promising, bringing academia closer to the implementation of the Agenda 2030.
  keywords: {Sustainable development;Robots;Oceans;Education;Service robots;Industries;ITU;marine systems;marine robotics;sustainable development;AI4good;SDG},
  URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9311023&isnumber=9310983

- R. Bachmayer, A. Kausche, P. Riesen and P. Gutierrez, "**Concept development for a minimally invasive Autonomous Underwater Vehicle**" *2020 IEEE/OES Autonomous Underwater Vehicles Symposium (AUV)*, St. Johns, NL, Canada, 2020 [virtual]
  doi: 10.1109/AUV50043.2020.9267943
  Abstract: We are presenting the concept, initial developments and in-situ component tests towards an optically tethered underwater vehicle (OTV). The concept is developed to enable operations in close proximity to the ocean floor without disturbing the sea-floor interface. During a recent technology cruise in the Ligurian Sea (22. - 25. February 2020) some of the crucial sub-components, such as bottom camera, optical communication module and overall system hardware were tested successfully. Close range direct control using optical communication was tested and qualitatively evaluated through purposely disturbed suspended sediment.

keywords: {Sea surface;Stability analysis;Power system stability;Optical sensors;Optical fiber communication;Navigation;Propulsion},
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9267943&isnumber=9267883

- D.A. Corbeanu; S. Krupiński; F. Maurelli, **"Blue Duck II: A low-cost AUV design based on a moving mass for shallow-water operations**", *2020 IEEE/OES Autonomous Underwater Vehicles Symposium (AUV)*, St. Johns, NL, Canada, 2020 [virtual]
  doi: 10.1109/AUV50043.2020.9267941
  Abstract: Our main goal is the development of a shallow water AUV (up to 10m depth) with the goal of being semi-modular, easy to build, with as many parts as possible 3D printable, easy to modify based on needs, and low cost. We tried to focus on using standard structural materials, and try to keep the design as simple as possible, while respecting the requirements set above. It can be used for marine research at low depths, but also for teaching and educational activities in marine robotics.
  Keywords: {autonomous underwater vehicles;design engineering;marine robots;three-dimensional printing;sensors}
  URL: https://ieeexplore.ieee.org/abstract/document/9267941

- P.N. Messan, S. Krupinski, G. Vallicrosa, P. Ridao, F. Maurelli, **"Evaluation of computer networking methods for interaction with remote robotic systems"**, IEEE Africon'21, Arusha, Tanzania, 2021 [virtual]
  Doi: arXiv:2110.06385 [cs.RO]
  Abstract: Use of robotic infrastructures can significantly increase with remote access. This would open up the possibility to use costly equipment without the need to buy them, or to simply access those assets remotely when actual travel is not possible or recommended - for example in pandemic times. In this paper we present an analysis of several networking techniques which allow remote robotics operations, alongside experimental results with distances ranging from hundreds of meters up to thousands of kilometers.
  Keywords: remote robotics, ipv6, proxy server, marine robotics
  URL: https://arxiv.org/pdf/2110.06385.pdf

- F. Ferreira, I. Kvasic, Đ. Nađ, L. Mandić, Nikola Mišković, **"Creating a remote access-ready infrastructure for the future"**, IEEE Oceans'22, Chennai, India, 2022 [virtual]
  Abstract: Due to its inherent characteristics, marine robotics trials require more complex logistics when compared to other robotics fields. Often, high potential research groups are impeded to put into practice their research due to the cost and logistics of deploying marine robots. In recent times, offering access to other research teams has been a focus of several projects. LABUST participates in one of these (EUMarineRobots) and offers its robots and infrastructure to other partners.

The Marine Robotics Research Infrastructure Network (EU-MarineRobots) project has the main goal of opening up key national and regional marine robotics research infrastructures (RIs) to all researchers in order to optimise their use. The project successfully attracted the best researchers around the world through a series of Transnational Access (TNA) actions. With the COVID-19 pandemic, TNA trials within the EU-MarineRobots project initially planned to take place physically have been transformed to remote access trials. Leveraging from previous work in virtual reality and from recently completed installations, LABUST could easily encompass these trials. A summary of these recent remote trials is included as an example of remote infrastructure access in marine robotics. In the case of LABUST, the construction of a new laboratory (including a new pool) was completed during the COVID-19 pandemic. This infrastructure was made ready to encompass remote trials given this emergent need and leveraging on previous virtual reality experience. Moreover, LABUST has prepared its infrastructure to allow any partner in the world to easily collaborate and test algorithms and devices without the need for physical presence. This is important in the context of marine robotics education as well. LABUST participates in the Intelligent Marine systems - a Pathway towards sustAinable eduCation, knowledge and empowermenT (IMPACT) project, a project with a significant educational component.
Keywords: remote robotics, marine robotics, robotics education