For many years there has been considerable interest by the scientific, offshore and naval sectors in the design and development of unmanned marine vehicles (UMVs) in order to perform a multitude of different tasks. Much advancement has been realized in this area, however, the need for advanced navigation, guidance and control (NGC) systems for UMVs continues to grow as these sectors now demand longer mission lengths coupled with increasingly more vehicle autonomy. Within the context of this Special Issue, UMV is taken as being a generic term to describe autonomous underwater vehicles (AUVs), underwater gliders and unmanned /autonomous surface vehicles (also known as uninhabited surface vehicles).

The dynamic characteristics of an UMV present a control system design problem which classical linear methodologies cannot easily or effectively accommodate. In addition, given the environment in which such vehicles operate, sophisticated NGC systems are essential particularly where the on-board sensor suites are low cost. Further complications also arise in the design of a NGC system for a vehicle where it is required to function and co-operate with others in group to fulfil the objectives of a given task.

In the first paper of this Special Issue, Lampe and Kurowski describe a novel search and rescue application of UMV technology. The unmanned rescue system acts fast and thus significantly increases the chance of survival of the persons who have fallen overboard from offshore platforms and ships. Whereas the second paper by Campbell et al addresses the issues of navigational safety of unmanned surface vehicles in operation at sea by automatically detecting and avoiding obstacles in compliance with COLREGs, the rules of the road. This is followed by the third paper from Bibuli et al who propose a swarm-based path following guidance system for a team of unmanned surface vehicles. Whilst the problem of wave disturbances affecting the operation of an AUV near the sea surface is considered by Dantas et al in the fourth paper. In the fifth paper by Caiti et al the design of a suitable strategy for independently controlling the wings of an underwater glider is reported. While in the sixth paper, Caharja et al present an integral line-of-sight guidance law for path following applications for autonomous surface vehicles. Next in the seventh paper written by Sharma et al, consideration is given to the application of nonlinear control algorithms for an unmanned surface vehicle. Finally, in the eighth paper, Steenson et al discuss the control of a hybrid AUV that has hover capabilities along with the presentation experimental results.

Finally, the Guest Editors would like to thank the Editor of the Journal of Engineering for the Maritime Environment, Professor Ajit Shenoi, for agreeing to support this Special Issue and to the Assistant Managing Editor, Mr Martin McDonald, for his friendly assistance and guidance with its organization. Also the tireless help in the preparation of the issue by the authors is gratefully acknowledged. In addition, they are to be congratulated on producing papers of such excellent quality. Furthermore, due recognition must be given to the referees for their support in this endeavour and the unselfish manner in which they reviewed and commented on the papers that have been presented. Through their academic prowess and enthusiasm, it has been possible to ensure and maintain the high quality publication output that is the hallmark of this journal. It is sincerely hoped that readers from all disciplines will find this Special Issue interesting, stimulating and useful in whatever aspect of unmanned marine vehicle design they are involved, and that it will also provide the genesis for the importation of ideas into other fields of study.

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