



OPEN ACCESS

APPROVED BY
Frontiers Editorial Office,
Frontiers Media SA, Switzerland

*CORRESPONDENCE
Xiaoguang Mou
✉ mouxg@gdou.edu.cn

RECEIVED 27 February 2025

ACCEPTED 06 March 2025

PUBLISHED 18 March 2025

CITATION

Wang H, Mao S, Mou X, Zhang J and Li R (2025) Corrigendum: Path planning for unmanned surface vehicles in anchorage areas based on the risk-aware path optimization algorithm.
Front. Mar. Sci. 12:1584329.
doi: 10.3389/fmars.2025.1584329

COPYRIGHT

© 2025 Wang, Mao, Mou, Zhang and Li. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Corrigendum: Path planning for unmanned surface vehicles in anchorage areas based on the risk-aware path optimization algorithm

Hongbo Wang^{1,2,3}, Shuaiwei Mao¹, Xiaoguang Mou^{4*}, Jinfeng Zhang² and Ronghui Li¹

¹Naval Architecture and Shipping College, Guangdong Ocean University, Zhanjiang, China, ²Hubei Key Laboratory of Inland Shipping Technology, Wuhan University of Technology, Wuhan, China, ³Guangdong Provincial Key Laboratory of Intelligent Equipment for South China Sea Marine Ranching, Guangdong Ocean University, Zhanjiang, China, ⁴School of Mechanical Engineering, Guangdong Ocean University, Zhanjiang, China

KEYWORDS

unmanned surface vehicles, anchorage areas, risk-aware path optimization, ship domain, Gaussian influence function, dual-phase smoothing strategy

A Corrigendum on

Path planning for unmanned surface vehicles in anchorage areas based on the risk-aware path optimization algorithm

by Wang H, Mao S, Mou X, Zhang J and Li R (2025) *Front. Mar. Sci.* 11:1503482.
doi: 10.3389/fmars.2024.1503482

In the published article, the **Abstract** contains certain abbreviations and terms that may affect the clarity and academic quality of the paper.

A correction has been made to the **Abstract** section. This sentence previously stated:

“In dense anchorage areas, the challenge of navigation for Unmanned Surface Vehicles (USVs) is particularly pronounced, especially regarding path safety and economy. A Risk-Aware Path Optimization Algorithm (RAPO) is proposed to enhance the safety and efficiency of USV navigating in anchorage areas. The algorithm incorporates risk assessment based on the A* algorithm to generate an optimized path and employs a Dual-Phase Smoothing Strategy to ensure path smoothness. First, the anchorage area is spatially separated using a Voronoi polygon, the RAPO algorithm includes a grid risk function, derived from the ship domain and Gaussian influence function, in the path evaluation criteria, directing USV to successfully bypass high-risk areas and as a result. Then the DPSS is used to decrease path turning points and boost path continuity, which in turn improves path economy. Simulation results demonstrate that this method significantly reduces the path length and the number of turning points, enhancing USV navigation safety in anchorage areas.”

The corrected sentence appears below:

“In dense anchorage areas, the challenge of navigation for Unmanned Surface Vehicles is particularly pronounced, especially regarding path safety and economy. A Risk-Aware Path Optimization Algorithm is proposed to enhance the safety and efficiency of Unmanned Surface Vehicle navigating in anchorage areas. The algorithm incorporates risk assessment based on the A* algorithm to generate an optimized path and employs a Dual-Phase Smoothing Strategy to ensure path smoothness. First, the anchorage area is spatially separated using a Voronoi polygon, the Risk-Aware Path Optimization Algorithm includes a grid risk function, derived from the ship domain and Gaussian influence function, in the path evaluation criteria, directing Unmanned Surface Vehicle to successfully bypass high-risk areas and as a result. Then the Dual-Phase Smoothing Strategy is used to decrease path turning points and boost path continuity, which in turn improves path economy. Simulation results demonstrate that this method significantly

reduces the path length and the number of turning points, enhancing Unmanned Surface Vehicle navigation safety and economy in anchorage areas.”

The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.