Document details

‹ Back to results | 1 of 1

IEEE Access
Volume 9, 2021, Article number 9348940, Pages 26323-26342

Locomotion Strategies for Amphibious Robots-A Review (Review)

(Open Access)

Rafeeq, M.[a], Toha, S.F.[a], Ahmad, S.[b], Razib, M.A.[a]

[a]Department of Mechatronics Engineering, Kulliyah of Engineering, International Islamic University, Gombak, Malaysia
[b]Department of Mechanical Engineering, Kulliyah of Engineering, International Islamic University, Gombak, Malaysia

Abstract

View references (139)

In the past two decades, unmanned amphibious robots have proven the most promising and efficient systems ranging from scientific, military, and commercial applications. The applications like monitoring, surveillance, reconnaissance, and military combat operations require platforms to maneuver on challenging, complex, rugged terrains and diverse environments. The recent technological advancements and development in aquatic robotics and mobile robotics have facilitated a more agile, robust, and efficient amphibious robots maneuvering in multiple environments and various terrain profiles. Amphibious robot locomotion inspired by nature, such as amphibians, offers augmented flexibility, improved adaptability, and higher mobility over terrestrial, aquatic, and aerial mediums. In this review , amphibious robots' locomotion mechanism designed and developed previously are consolidated, systematically The review also analyzes the literature on amphibious robot highlighting the limitations, open research areas, recent key development in this research field. Further development and contributions to amphibious robot locomotion , actuation, and control can be utilized to perform specific missions in sophisticated environments, where tasks are unsafe or hardly feasible for the divers or traditional aquatic and terrestrial robots. © 2013 IEEE.

SciVal Topic Prominence

Topic: Amphibious Vehicles | Epicyclic Gears | Paddles

Prominence percentile: 64.857

Author keywords

amphibious robot | autonomous amphibious vehicle | Bioinspired robot | multimodal locomotion

Indexed keywords

Engineering controlled terms: Antennas | Military applications | Robotics

Engineering uncontrolled terms: Amphibious robot | Combat operations | Commercial applications | Locomotion mechanism | Locomotion strategies | Technological advancement | Terrain profile | Terrestrial robots

Engineering main heading: Robots

Funding details

Funding sponsor	Funding number	Acronym
International Islamic University Malaysia	IRF19-026-002,TFW2019	IIUM

Funding text

This work was supported in part by the International Islamic University Malaysia under Research Grant "Highly Efficient Lithium-Ion Battery Recycling with Capacity-Sorted Optimization for Secondary Energy Storage System," IRF19-026-002, and in part by IIUM under the KOE Postgraduate Tuition Fee Waiver Scheme 2019 (TFW2019).

ISSN: 21693536
Source Type: Journal
Original language: English
DOI: 10.1109/ACCESS.2021.3057406
Document Type: Review
Publisher: Institute of Electrical and Electronics Engineers Inc.

References (139)

View in search results format >

All | Export | Print | E-mail | Save to PDF | Create bibliography

1 Zereik, E., Bibuli, M., Mišković, N., Ridao, P., Pascoal, A.
Challenges and future trends in marine robotics

(2018) *Annual Reviews in Control*, 46, pp. 350-368. Cited 29 times.
doi: 10.1016/j.arcontrol.2018.10.002

View at Publisher

2 Sahoo, A., Dwivedy, S.K., Robi, P.S.
Advancements in the field of autonomous underwater vehicle

(2019) *Ocean Engineering*, 181, pp. 145-160. Cited 36 times.
http://www.journals.elsevier.com/ocean-engineering/
doi: 10.1016/j.oceaneng.2019.04.011

View at Publisher

3 Hardy, T., Barlow, G.
Unmanned Underwater Vehicle (UUV) deployment and retrieval considerations for submarines

(2008) *Conference Proceedings of the Institute of Marine Engineering, Science and Technology - INEC 2008: Embracing the Future*. Cited 19 times.

4 Yuh, J.
Design and control of autonomous underwater robots: A survey

(2000) *Autonomous Robots*, 8 (1), pp. 7-24. Cited 467 times.
doi: 10.1023/A:1008984701078

View at Publisher

5 Ho, G., Pavlovic, N., Arrabito, R.
Human factors issues with operating unmanned underwater vehicles

(2011) *Proceedings of the Human Factors and Ergonomics Society*, pp. 429-433. Cited 19 times.
ISBN: 978-094528939-5
doi: 10.1177/1071181311551088

View at Publisher

6 Manley, J.E.
Unmanned surface vehicles, 15 years of development

(2008) *OCEANS 2008*, art. no. 5152052. Cited 201 times.
ISBN: 978-142442620-1
doi: 10.1109/OCEANS.2008.5152052

View at Publisher