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MULTI-TERRAIN DRONES FOR END-TO-END OCEAN MONITORING AND PROTECTION

Abstract

Autonomous drones are widely used for collecting data in remote and hazardous locations for ocean monitoring and protection. However, conventional unmanned aerial vehicles cannot navigate diverse terrain such as the sky, underwater, and the ground. To address this limitation, multi-terrain autonomous drones have been developed, allowing efficient and effective data collection for earth exploration. In this research, we propose a novel approach for end-to-end ocean monitoring and protection using multi-terrain drones that can seamlessly transition between different terrains. The proposed drone has sensors and communication systems for data collection and transmission on various parameters such as water quality and marine debris. The collected data is transmitted to a nearby offshore station. Later, the data will be up-linked to the connected nano-satellite for further transmission to the ground station. The experimental results show that the proposed multi-terrain drones are highly effective in monitoring and protecting the ocean. This study contributes to developing autonomous drones for ocean monitoring and protection, which can provide valuable insights for sustainable ocean management. The feasibility of the proposed approach is demonstrated through successful drone operations in different terrains, thereby highlighting its potential for earth exploration.