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Ministry of Earth Sciences



DeepDATA: A Data-Driven Digital Taxonomy Platform for Deep Sea Fish Biodiversity Documentation and Future AI Applications

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Deep-sea fish documentation is limited by reliance on physical records and manual authentication, restricting data accessibility and academic engagement. DeepDATA (Deepsea Digitally Automated Taxonomy Assistant) was developed as a data-driven digital taxonomy platform for the systematic documentation and exploration of deep-sea fish biodiversity along the Indian coast. The platform employs a Flutter-based Android application connected to a centralized institutional MySQL database through a PHP-based RESTful API, enabling structured retrieval and management of species information. The database stores taxonomic attributes, descriptive characteristics, validated species images, authorship information, and conservation status, while role-based access and expert-supervised data management supports controlled addition and validation of records. The application has been deployed as a publicly accessible Android application, providing researchers, students, and other users with a unified interface for exploring curated deep-sea fish biodiversity records. The structured and expandable dataset establishes a foundation for future artificial intelligence and machine learning applications, including image-based species recognition, intelligent taxonomic assistance, and data-driven analysis of species occurrence and distribution. DeepDATA demonstrates the role of digital data infrastructure in advancing technology-enabled marine biodiversity research and creating a pathway toward AI-assisted deep-sea fish taxonomy.

Keywords: Deep-sea fishes, Biodiversity documentation, Taxonomic database, Mobile application, Species management