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Patent Search

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Abstract:

The invention discloses SeaAegis, an intelligent system for enhancing coastal safety through real-time oceanographic monitoring, AI-driven hazard prediction, and automated alert dissemination. The system integrates data from sensors, weather APIs, and satellite feeds to forecast dangerous sea conditions and provide personalized safety recommendations. Users receive live alerts, weather updates, and safe beach navigation guidance through a mobile interface, while authorities utilize a centralized dashboard for dynamic resource allocation. By combining artificial intelligence, geolocation, and predictive analytics, SeaAegis enables proactive hazard prevention, optimized emergency response, and improved coastal management, ensuring safer and more informed beach experiences for the public and coastal safety agencies.

[Complete Specification](#)

Description:FIELD OF THE INVENTION

[001] The present invention generally relates to ocean safety management and real-time environmental monitoring systems. More particularly, the invention pertains to an intelligent and integrated platform utilizing artificial intelligence, geolocation, and live data analytics to provide oceanic hazard alerts, weather updates, and personalized recommendations for beachgoers and coastal authorities. The invention is directed toward improving coastal safety, optimizing beach resource allocation, and enhancing the overall experience of visitors and monitoring agencies through data-driven predictive insights and automated alert systems.

BACKGROUND OF THE INVENTION

[002] Coastal tourism and ocean recreation have expanded rapidly in recent decades, leading to an increased influx of beachgoers, water sports enthusiasts, and maritime operators. However, this growth has been accompanied by heightened exposure to environmental risks such as unpredictable tides, rip currents, cyclonic weather events, and insufficient real-time monitoring of oceanic conditions. Conventional systems in use today rely primarily on static weather forecasts or localized manual observation, which fail to provide instantaneous hazard information or personalized guidance to coastal visitors.

[003] Existing prior-art solutions focus mainly on sensor-based environmental monitoring or centralized data collection without intelligent prediction or end-user interaction. For instance, some known systems measure meteorological parameters such as wave height and wind speed but lack machine learning capabilities for early hazard

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