

Space Debris Tracker with Real-Time Orbit Data

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Abstract

The increasing accumulation of space debris poses significant threats to satellites, space missions, and the sustainability of orbital environments. This project, Space Debris Tracker with Real-Time Orbit Data, aims to provide an interactive dashboard that visualizes current debris orbiting Earth using real-time data from NORAD or Space-Track feeds. The system integrates a Spring Boot backend with a MySQL database to manage logs and historical records, while the frontend offers both tabular and 2D map-based visualizations for debris tracking. Users can apply filters such as size, altitude, and risk level to analyze and prioritize debris of concern. By combining real-time monitoring with intuitive data visualization, the system supports researchers, space agencies, and policy makers in addressing the growing challenge of space junk management.

Keywords

Orbital Debris, Real-Time Tracking, Space Situational Awareness, TLE Data, Spring Boot, Data Visualization.

