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ICESAT-2 TRACKING APP FOR PUBLIC ENGAGEMENT

Abstract

Information regarding the predicted ground tracks of Earth observing satellites is typically difficult to find and understand for the general public. This paper will describe and demonstrate an iOS mobile application for tracking NASA's ICESat-2 (Ice, Cloud, and land Elevation Satellite 2), making it easier for users to see exactly when the satellite will be passing over any location in the world. ICESat-2, launched in 2018, uses green lasers to track elevation changes in polar ice and indirectly measure trees, land, and water, providing a precise height map of our planet. Most satellite tracking mobile apps display information about where a specific satellite is at that given moment and when it will be passing over the user's location in the near future. *ICESat-2* the app differs by allowing users to search for data about the satellite's future flybys relative to a specific search location and radius that they get to choose. The search results include points up to three months into the future. By supplying user-centric results, users are provided relevant data in an easy-to-access manner. Additionally, this data is very clear to visualize in-app through maps, pins, and ground track lines. This becomes an incredibly useful tool not only to plan an observation of the satellite as it passes, but also for knowing when elevation data for a specific area will be available. In addition, this flyby information helps students and citizen scientists take more valuable tree height measurements to better validate the elevation data collected by the satellite. To achieve this outreach product, three key components were developed. These include a Python script to simplify the raw ground track data, a Node.js server that actively takes requests, and the iOS app itself. From initial beta tests, it has been noted that providing users with a map for visual awareness of search radius and result coordinates gives them a more comprehensive understanding of the data. Overall, by cleaning the raw data and making it available in a much more accessible and easier to understand way, *ICESat-2* the app has exceeded expectations in providing educational and exciting data for all.