

Satellite Event Detection

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With the increasing number of satellites launched into space, it has become essential to anticipate disastrous space events and formulate effective policies based on the observations. As part of the Google Summer of Code program 2021, we developed a set of event detectors under the two-body problem by implementing orbital mechanics algorithms from the literature. We developed a point-by-point event detection approach that is accelerated using the numba package and configured in a flexible API. To ensure the correctness of the code, we validated all the added event detectors against the Orekit library. The added functionalities enable users to track one or more events during the propagation of an orbit. This, along with the perturbations already present in poliastro, makes the perfect combination to study the dynamics of non-keplerian satellite orbits. We believe this event detection module would be a good fit for real-life satellite orbit analyses and a potential integration tool for satellite missions.

Authors: GONDHALEKAR, Yash (BITS Pilani, Goa); Mr CANO RODRÍGUEZ, Juan Luis; Mr GARRIDO, Jorge Martinez (poliastro)

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