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GALACTIC COORDINATES NAVIGATION PLANNING FOR AUTONOMOUS SPACECRAFT POSITIONING

Abstract

The development of autonomous navigation systems for satellites and spacecraft has become increasingly important in enabling these vehicles to operate without constant input from Earth-based systems. This abstract outlines a proposed approach to galactic coordinates navigation planning, which aims to allow satellites and spacecraft to determine and transcribe their general location in space without radio transmission signals from Earth's DNS or other satellites. Traditional satellite navigation systems rely on signals transmitted from Earth-based systems or multiple satellite networks to determine their position in space. However, in scenarios where such signals are unavailable or unreliable, autonomous navigation inundates call for critical decisions. The proposed approach seeks to leverage galactic coordinates and celestial reference points to enable autonomous positioning without reliance on external signals. The system will utilize galactic coordinates as a reference frame for positioning. By understanding the quirks of celestial bodies, the satellite or spacecraft will extrapolate its location relative to these reference points, enabling the vehicle to navigate through space using celestial objects as navigational standpoints independent of Earth-based signals. Multi-body problem of relative reference plane prejudices the principle of the gravitational influences of multiple celestial bodies on the spacecraft's trajectory, ingrasping the predictive navigation, taking into consideration the gravitational forces exerted by various celestial bodies to forecast the craft's course with a high degree of accuracy. To enhance the system's predictive capabilities, machine learning algorithms will be employed to analyze and interpret vast databases of celestial data. By assessing the unique characteristics of the celestial bodies, the system will predict the craft's position and trajectory with greater precision over time. The proposed galactic coordinates navigation planning system offers a novel approach to autonomous spacecraft positioning in space. By leveraging celestial reference points, predictive navigation techniques, and machine learning, the system aims to enable satellites and spacecraft to drive independently and accurately navigate to specific locations without constant Earth-based signal assistance.

Keywords: Galactic Coordinates, Celestial Reference Points, Autonomous Navigation, Multi-Body Problem, Machine Learning, Spacecraft Positioning