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AUTONOMOUS NAVIGATION AND GUIDANCE SCHEME FOR PRECISE AND SAFE PLANETARY LANDING

Abstract

Precise and safe landing spacecraft on the moon and planetary bodies is a rather difficult and risky task. Accurate relative navigation between the spacecraft and the planetary surface is essential, together with the obstacle detection and avoidance. Due to the communication delay induced by the large distances between the earth and target bodies, traditional spacecraft navigation, guidance and control (GNC) mode using the deep space network (DSN) is not suitable for precise and safe planetary landing, operations in the landing phase must be done autonomously using onboard sensors and algorithms. This paper presents the autonomous navigation and guidance scheme for future precise and safe planetary landing.