IAF SPACE EXPLORATION SYMPOSIUM (A3)
Small Bodies Missions and Technologies (Part 1) (4A)

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A MULTI-SCALE LABELLED DATASET FOR BOULDER SEGMENTATION AND NAVIGATION ON SMALL BODIES

Abstract

The capability to detect boulders of multiple sizes on the surface of small bodies is beneficial for vision-based applications around small bodies. These include, but are not limited to, hazard detection during critical operations, safety quantification, autonomous scientific operation planning, and navigation. Such capability however faces challenging implementations due to a variety of different and irregular shapes, properties, and distribution of the boulder's population, rapid variability in the illumination conditions, and lack of publicly available datasets. In this work, the authors provide a statistical characterization of an open-access dataset specifically designed to democratize access to labeled datasets about small bodies and to enable advanced data-driven image processing algorithms. The work fully characterizes the statistical properties of the dataset as well as the procedure adopted in order to generate it.