

Labelling technique for the fast Star Identification

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Star sensor provides with the most accurate attitude determination method for the spacecraft. Its accuracy comes from the exact star positions on the image of sensor, and it is need to identify the stars exactly for the further determination process. Usually it is time consuming work with the limited computational power of star sensor, especially it takes much longer time when the star sensor is in the case of lost in space, which has no priori information of its attitude. Many star identification algorithms have been introduced to solve this identification issue aiming the fast identification speed. However, the faster identification algorithm is always required to satisfy the better performance of star sensor. At this study, a new star identification algorithm is proposed for the star sensor in the lost in space case. The algorithm is based on labelling technique that assign a label value for the each star combination. Using the label value, multiple stars are identified simultaneously without repeating the search work. This makes the efficient star identification with fast speed, and the fast speed supports high reliability of its identification result when the identification result can be confirmed with redundancy. Proposed algorithm is verified its performance with simulation under various conditions, and compared with other space proven algorithm.

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