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MULTI-COLOR PHOTOMETRY AND CLASSIFICATION FOR MULTI-PLATFORM GEO OBJECTS

Abstract

Geosynchronous Earth Orbit (GEO) objects play significant roles in many aspect of our life. Large amount of satellites from different platform were launched to GEO for different use. However, the orbital resources are limited. For space environment models development, it is vitally important to reach Space Situation Awareness. With small aperture large field of view telescopes, we survey for GEO region in different bands. Based on the observe data, object detection, catalog correlation and multi-color photometry are performed consecutively. We investigate different objects color index distributions and analyse relation between object launch age, color preliminarily and other features. Besides, by virtue of modern statistic methods, we use machine learning algorithm to classify these observe data with multi-color photometric measurements. We contrast performance of different methods. Result shows multi-color photometry can better express some other physical feature and help classify space object accurately.