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Point Source Classification on Astronomical Photometric Images Using Artificial Neural Network

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Gravitational Optical Transient Observer (GOTO) is a set of telescopes primarily for optical follow-up observation of gravitational wave from projects such as LIGO and VIRGO. It can cover at least18 square degree of sky, and at most 36 square degree per pointing. The secondary objective of GOTO is to perform an all-sky survey. Each night, it could cover as much as 20,000 square degree of sky. Such large area of coverage produces as large number of objects. It was estimated to be able to collect 20 million sources per night. Processing such quantity of data manually is extremely difficult. One of the most challenging task is to perform object classification. A solution to this problem is to have machine perform classification, which is possible via machine learning algorithm. In this work, we use supervise machine learning performed on simulated data to create a point source classifier. We will focus on application and performance of artificial neural network in peforming classification of point sources.

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