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FATS	Changed optimization method to Powell for calculate_CAR	2 years ago
.gitignore	Initial commit	4 years ago
DESCRIPTION.rst	initial commit into FATS repo; previous commits are in tsfeat repo	4 years ago
LICENSE	Initial commit	4 years ago
README.rst	initial commit into FATS repo; previous commits are in tsfeat repo	4 years ago
requirements.txt	add requirements file and parsing of it in setup.py for install_requi...	2 years ago
setup.py	add requirements file and parsing of it in setup.py for install_requi...	2 years ago

README.rst

FATS: Feature Analysis for Time Series

Summary: Compilation of some of the existing light-curve features.

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Installation: Clone this repository and do python setup.py install.

Or pip install FATS for the latest stable version.

Description: In time-domain astronomy, data gathered from the telescopes is usually represented in the form of light-curves. These are time series that show the brightness variation of an object through a period of time (for a visual representation see video below). Based on the variability characteristics of the light-curves, celestial objects can be classified into different groups (quasars, long period variables, eclipsing binaries, etc.) and consequently be studied in depth independently.

In order to characterize this variability, some of the existing methods use machine learning algorithms that build their decision on the light-curves features. Features, the topic of the following work, are numerical descriptors that aim to characterize and distinguish the different variability classes. They can go from basic statistical measures such as the mean or the standard deviation, to complex time-series characteristics such as the autocorrelation function.

In this document we present a library with a compilation of some of the existing light-curve features. The main goal is to create a collaborative and open tool where every user can characterize or analyze an astronomical photometric database while also contributing to the library by adding new features. However, it is important to highlight that this library is not restricted to the astronomical field and could also be applied to any kind of time series.

Our vision is to be capable of analyzing and comparing light-curves from all the available astronomical catalogs in a standard and universal way. This would facilitate and make more efficient tasks as modeling, classification, data cleaning, outlier detection and data analysis in general. Consequently, when studying light-curves, astronomers and data analysts would be on the same wavelength and would not have the necessity to find a way of comparing or matching different features. In order to achieve this goal, the library should be run in every existent survey (MACHO, EROS, OGLE, Catalina, Pan-STARRS, etc) and future surveys (LSST) and the results should be ideally shared in the same open way as this library.