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The Python Programming Code on Cloud Computing Service for the Stellar Photometry Astrophysics Teaching

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Nowadays, there is much software used for both education and astronomy research. For photometry, license software and high performance of computer's operating system are required, which are a fund limitation for some schools in Thailand. Thus, in this article, we develop and present the Demonstration Photometry Scripts for Astrophysics Teaching (DPSAT version 1.0). The program is designed to work on cloud computing services via internet browsers to avoid the hardware and operation requirement pain points. The DPSAT is programming on flexible, low-cost, on-trend language, Python, and Jupyter Notebook online editor. In advance, our new code supports the home-use image or video file format, i.e., jpg, png, or mp4. Thus it will be more accessible for teachers and students who do not have the standard astronomical instruments. The DPSAT measures the stellar light intensity from the time-series still-images or video files from a smartphone or another digital device. The code can extract video files into sequenced still images, then transform the RGB color space images into greyscale. The light intensity signal of selected pixels is counted with a simple aperture method in time series. It shows the results, for example, the mean signal, standard variation, measured signal as light intensity versus time, and image of light sources. This will be fruitful for low-cost and easily accessible for teaching astrophysics subjects.

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