COMPUTER VISION AS A TOOL FOR STUDYING ECLIPSING BINARY STARS

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Computer vision is a subfield of artificial intelligence that deals with automated detection and classification of objects from images, used in a variety of advanced applications, from facial recognition to self-driving cars. While other machine learning methods have gained a strong footing in astronomy over the last several years, computer vision is still a relatively rare and novel approach. We have been experimenting with this technique in the context of eclipsing binary stars, with the aim to automate the analysis of photometric time-series data from ground-based and space surveys. The current and future deluge of such data requires the automation of as many tasks as possible, otherwise much of it will remain unutilized. Computer vision might be used to estimate the stellar and orbital parameters of eclipsing binaries based on the images of their light curves. As a proof-of-concept, we have already developed a computer vision system for automated recognition of light curves with total eclipses and demonstrated that a computer can perform this task better than humans.