
Pushing automated morphological classifications to their limits with the Dark Energy Survey

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Abstract

Galaxy morphologies are one of the key diagnostics of galaxy evolutionary tracks, but visual classifications are extremely time-consuming. The sheer size of Big Data surveys, containing millions of galaxies, make this approach completely impractical. Deep Learning (DL) algorithms, where no image pre-processing is required, have already come to the rescue for image analysis of large data surveys.

I will present the largest multi-band catalog of automated galaxy morphologies to date containing morphological classifications of ~ 27 million galaxies from the Dark Energy Survey. The classification separates: (a) early-type galaxies (ETGs) from late-types (LTGs); and (b) face-on galaxies from edge-on. These classifications have been obtained using a supervised DL algorithm. Our Convolutional Neural Networks (CNNs) are trained on a small subset of DES objects with previously known classifications, but these typically have m

Video: https://youtu.be/REBf_VymK_o

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