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An Implementation and Evaluation of Machine Learning Methods for Morphological Galaxy Classification

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We present a novel summary and comparison of various machine learning methods for morphological classifications of galaxies from the Sloan Digital Sky Survey (SDSS). We re-implement these methods in an open-source and publicly available repository, and examine the accuracy of these methods in reconstructing ground-truth expert knowledge distributions from previous crowd sourcing work, as well as provide an analysis and comparison of the performance of the methods selected. Projects such as Galaxy Zoo, a large scale crowd sourcing initiative using human/expert knowledge to classify a subset of data from the SDSS, produced large labelled datasets of galaxies which has seen both crowd sourced solutions and methods in literature attempting to match classification accuracy of experts. By conducting such a study in an open-source manner, this work will allow future methods to be quickly compared and evaluated against a sizeable subset of existing methods.

Summary

We present a novel summary and comparison of various machine learning methods for morphological classifications of galaxies from the Sloan Digital Sky Survey (SDSS), and implement these methods in an open-source publicly available repository.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

Hons

Main supervisor (name and email)
and his / her institution

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Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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