

Radio galaxy classification with scattering-transform-based generative augmentation

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The growth of radio astronomy data rates challenges current data processing techniques. With the Square Kilometer Array (SKA) expected to produce exabytes of data every year, many more radio sources can be expected to be discovered at higher redshift and better resolution. Due to storage difficulties, analysis of this data will need to be done without manual manipulation of visibilities. An early-stage analysis of this data can be done using interpretable Machine Learning (ML). However, classifier performance has proven highly data-dependent and unstable on small, unlabelled datasets. In this talk I will propose generative modelling, based on the scattering transform, to artificially augment training data for training of classifiers. I will demonstrate that stability, interpretability and training efficiency are benefits of using the scattering transform, and show how classifier performance is affected by artificial augmentation.

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