



Contribution ID: 80

Type: **Poster Presentation**

Radio Image Segmentation with Variational Autoencoders

Tuesday, 31 May 2022 14:57 (3 minutes)

The Square Kilometre Array (SKA) will be the world's largest radio telescope, producing data at a rate of about 1Tb per second. Even after conversion to images, traditional methods of source detection and classification will not be sufficient. The pre-construction phase of the SKA project saw the launch of SKA Data Challenge 1 (SDC1), a model dataset released for analysis by the community. This work develops a machine-learning approach to detecting and classifying the full radio source population. A Variational Autoencoder (VAE) is presented as a method of image segmentation. The trained network reconstructs the raw image data as a binary segmentation map. The segmentation map describes the angular size, eccentricity, position angle and location of the source. The classes of the source population can be represented by the latent space of the network if appropriate latent vectors are chosen. This work serves as a proof of concept that a VAE can detect and classify radio source populations from SKA-like data.

Main Topic

Image segmentation, object detection and classification

Secondary Topic

Participation mode

In person

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Session Classification: Poster Session Day 2