

Score-Based Generative Models for Radio Galaxy Image Simulation

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In view of the increasing amounts of data accumulating in extragalactic surveys of ever-growing extent, the ability to realistically synthesise image data takes a significant role, proving valuable in testing data analysis methods, developing theoretical frameworks and training machine learning models. As a product of the latest advancements in the field of deep generative modelling, score-based generative models, commonly known as diffusion models, have emerged as powerful instruments for the task of realistic image generation.

This talk will provide insight into our ongoing efforts to implement a score-based generative model dedicated to generating realistic radio galaxy images. It will cover a brief introduction to the basic working principles of diffusion models, along with a more specific description of the particular methods for implementation and training employed in this project. Further, the metrics utilised for evaluating the quality of generated images will be discussed. Finally, preliminary results from our work will be presented, offering insight into the advancements achieved thus far.

Primary author: MARTÍNEZ, Tobias (U Hamburg)

Presenter: MARTÍNEZ, Tobias (U Hamburg)