Galaxy Imaging CNN application

Lecture 8

Course of:

Signal and imaging acquisition and modelling in environment

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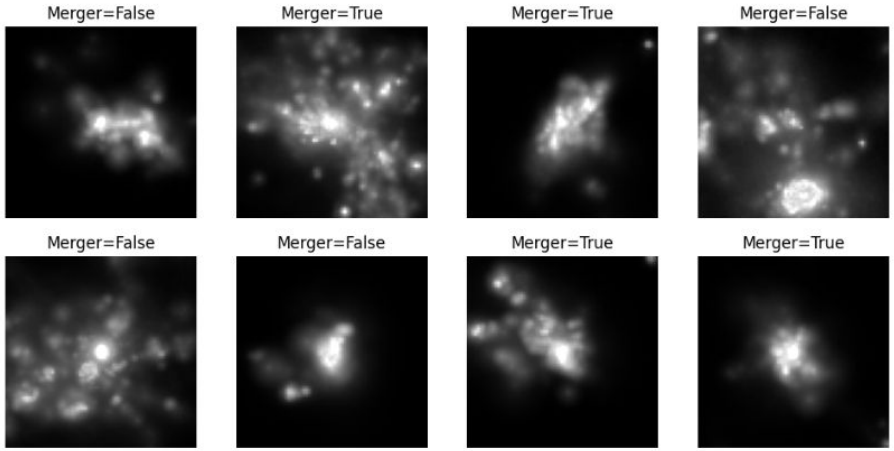
A Universe in a box

A Universe in a box

Simulated datasets as training for real images

- The number of mergers that a galaxy undergoes over its lifetime is crucial to understand the evolution of the Universe
- We cannot say if two nearby galaxy in a real image will merge or not in the future!
- We can use simulations to generate synthetic images of galaxies and label them based on wether or not they will merge in the simulation. **This is a critical dataset that can be trained to help in predicting a complex phenomenon!**



Your Turn

Today’s lab activity

- Using the notebook provided download the imaging dataset and prepare a CNN that can identify galaxy mergers and non-mergers
- Use the basic setup of the CNN you have seen in Lecture 5, add Early Stop callbacks, kernel regularizations and other strategies that limit the overfitting of the training set.
- Once you are satisfy study how the results would change if we add Poisson noise to the input images.

Notebooks:

https://colab.research.google.com/drive/1aq4RCaVPaU--SXhz8zB88TbTSWfKQAAB?usp=share_link