

# Creation of 3D structures from a 2D images using artificial intelligence (AI)

## Bachelor's – Master's Thesis

Powders are frequently characterized using X-ray computed tomography (XRCT), an experimental method that offers details on the 3D structure of a solid sample as stacked 2D images (or slices). However, this is a laborious process that takes a significant amount of time. The AI method will be used to solve this challenge. To train the AI model, we need 3D training data, which is difficult to provide. 2D imaging methods are generally faster, have higher resolution, and are more commonly available. Therefore, we would like to use a new AI method that is capable of generating highly accurate 3D datasets using representative 2D images.

### Your Tasks:

- Application/ further development of the AI framework Execution (if necessary establishment) of experiments or simulations to generate data

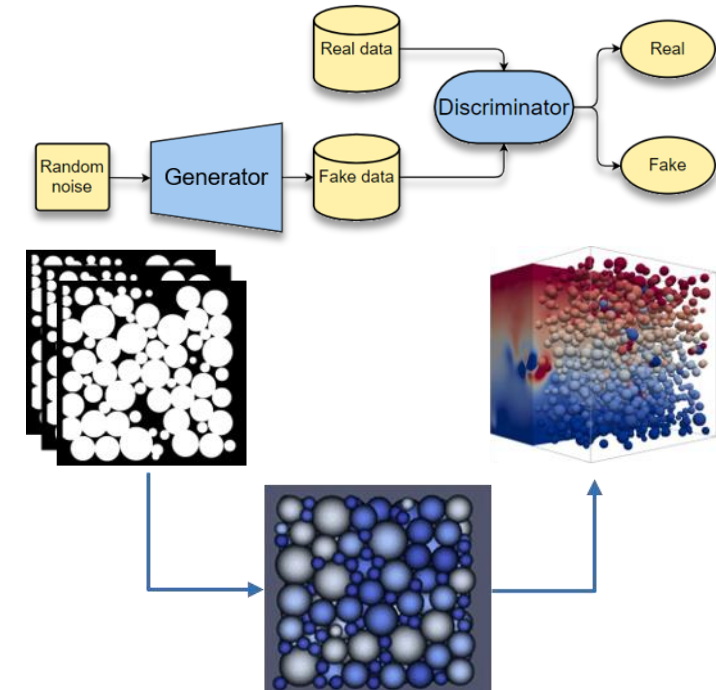
### Methods:

- AI (Neur. Nets, GAN. /Progr...)
- Dependent on the individual case, simulations (CFD-DEM), experiments, etc.

### Requirements:

- Python programming
- Basic knowledge of AI methods

## Generative Adversarial Network (GAN)



**Start:** Immediately, or by arrangement

- The duration and focus will be adjusted to the requirements of each kind of thesis.
- We can arrange a personal conversation at any time and discuss this or other topics without obligation.

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