# TableGAN

The Table GAN neural network allows to generate synthetic data from an original dataset, it has the potentiality of resolving privacy concerns or broader a limited dataset of any kind of use.

What is a GAN

GAN stands for Generative Adversarial Network, under the hood there are 2 neural networks: a generative and a discriminator one. The generator outputs data that tries to replicate original training data, then the discriminator classify generator’s output as real of fake. By running many times this process, the generator gets better into fooling discriminator, therefor it is possible to create new unseen data.

How to use the TableGan

In order to run the application, first you need to setup a virtual environment with the required dependencies installed, these dependencies are specified in the “requirements.txt” file.

The TableGan model supports pandas dataframe or CSV files as dataset and must know which columns contains continuous data (e.g. “1.5”, “5”, “2.7”).

Once the model is created, you can train (fit) it with imported dataset, then it is possible to generate new synthetic samples and save them. The application saves also trained model.

There are 2 TableGan application: TableGan and TrainedTableGan.

* TableGan: this application loads, trains and generates new synthetic datasets.
* TrainedTableGan: this application uses a previously trained model to generate new synthetic datasets.