Exercise AI researcher

You can use the language and the framework of your choice to do the following exercise. You strongly advise you keep your code and your output as concise as possible. You can use a script or notebook, but if you use a script please create a document containing the outputs.

Estimated time : 1h30

The goal of this exercise is to map a 2D latent space to probabilities of belonging to different classes. Here we will use the MNIST toy dataset. Some of the tasks are voluntarily at a high level (for example point 3), because the choice of the method is on you.

1) Prepare MNIST dataset
2) Create a convolutional auto-encoder with an embedding of size 2 and train it on MNIST
3) Create a method to accurately estimate the probability of belonging to a given class for an image input
4) Map the 2D latent space to the probability space
5) Show the result with the visualization method of your choice