

## Mini-project n° 2 – Conditional VAEs

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The objective of this mini-project is to define and train a Conditional VAE (CVAE), by following the instructions below:

- Find resources that explain what a CVAE is, its difference with VAEs, the loss functions used to train it etc.
- Train a CVAE on the Fashion-MNIST dataset (available to download from torchvision).
- Generate 5 new samples for each class of the Fashion-MNIST dataset using the CVAE.
- Use Pytorch
- Explain and argue the different choices you make along the way, in particular:
  - The choice of the architecture, the layer types, the layer sizes and the activations.
  - The choice of the different hyper-parameters: batch size, learning rate, number of epochs, regularization weight...
  - The choice of the loss function, the different terms in it, and their individual purposes.
- Include links to articles, blog posts, videos... that helped you decide on the above choices.
- Include the code of the different trials/experiments that helped you decide on the above choices.
- Plot different visualizations for the results: the curves of the different terms in the loss functions, the learnt latent space...