

## Deep Learning and Generative Models

### Project assignment #22

#### **Project objective:**

- Train a model for image classification.

#### **Dataset:**

Tiny ImageNet contains 100000 images of 200 classes (500 for each class) downsized to 64×64 colored images.

Each class has 500 training images, 50 validation images and 50 test images.

<https://paperswithcode.com/dataset/tiny-imagenet>

#### **Network model:**

- Classification architecture like a Resnet.

#### **Detailed information:**

Train a model to classify all the images and make some ablation studies you prefer.

In addition, add one ablation study to evaluate how performance vary if the number of classes during the training are 1 or 10 (the last 9 are randomly or carefully selected):

Step (a):

1. choose one class "A" (the one you prefer)
2. train from scratch the model with only the images related to that class "A" you chosen
3. collect info about classification performance (of class "A")

Step (b):

4. choose randomly 9 classes
5. train from scratch the model with the images of class "A" + images of the 9 classes
6. collect info about classification performance (of class "A" and of all 10 classes chosen)
7. repeat points 4,5,6 at least 3 times

Step (c):

8. choose the 9 classes you think most resemble class "A"
9. repeat points 5,6

How the classification performance of class "A" changed?

Could you drawn some conclusions? (e.g. it is better to train the model only with the images of class "A" or not? There are some differences on performance depending of which additional classes you use? ...)

**Additional notes:**

To download a zip and info about the dataset:

<https://www.kaggle.com/datasets/akash2sharma/tiny-imagenet>

<http://cs231n.stanford.edu/tiny-imagenet-200.zip>