Deep Autoencoder for fusion Pokémon graph

Traing data set:

* Around 18k images given to you for training.

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Task:

* Reconstruction
  + Your autoencoder model has two components: encoder and decoder.
  + Encoder: input data point x -> bottleneck representation z
  + Decoder: bottleneck representation z -> reconstructed data point x’
  + The bottleneck size z is of a limited dimension (8192).
  + We can think of it as a compression of the original data.
  + We will test the MSE between x and x’. I.e., there should be minimal information
  + loss during the compression
* Linear probing of the bottleneck representation
  + Does the bottleneck feature contain valuable information?
  + In addition to the images, we will also give a label of each fusion pokemon, and the label is the type (e.g., grass and ice, fire, bug and flying, etc.)
  + Given z, we will train a logistic regression model on it to predict the label.(There are 170 number of types.)
* Sampling
  + We will compute the mean and std over all the z generated by your model on our
  + testing data.
  + We will then sample z’ based on the mean and std.
  + We then run decoder on z’ to generate a new fusion Pokemon image.
  + We will display your images.

Testing/Evaluation:

* You train your model (an autoencoder model), and submit to our server. The testing data will be hidden from you
* Score = reconstruction MSE / probing accuracy

Constraints

● Both your model size and the running time (inference on our testing data points) will be constrained.

●The range 50M for the model size and 50 secs for the running time.