This is a multilabel classification problem. You are given a set of images which are present in a folder named “images”. There are four attributes and each image can have multiple attributes. The annotation is available in labels.txt and the format of the file is as follows.

| **Image Name** | **Attr1** | **Attr2** | **Attr3** | **Attr4** |
| --- | --- | --- | --- | --- |
| image\_0.jpg | 1 | NA | 0 | 1 |
| image\_1.jpg | NA | 0 | 0 | 0 |
| image\_2.jpg | 1 | 1 | 0 | 0 |
| image\_3.jpg | 1 | 1 | 0 | 0 |
| image\_4.jpg | 1 | 1 | 0 | 0 |

“1” implies that a particular attribute is present for the image and “0” signifies the absence of that attribute. You may also notice that some fields are tagged “NA” which means that information about the corresponding attribute in that image is not available.

You need to write a deep learning based python code which can train a multilabel classification algorithm for this dataset. So deliverables are:

1. Training code which takes in the images and labels as input and produces a deep -model file containing weights.
2. Loss curve plot with loss in y axis and iteration number in x axis for training images. Ylabel and xlabel for the axes should be “training\_loss” and “iteration\_number” respectively. Title of the plot should be “multilabel\_problem”.
3. Inference code which takes in an image as input and prints the list of attributes present in that image.