**Image Caption Generator User Manual**

1. **Introduction:**

This document discusses three issues.

* How to download the project and set up the environment to run the project.
* How to predict the caption of any given image.
* How to reproduce the results.

1. **Setting Up the Project and Environment:**

Download the folder named image caption from this link: <https://drive.google.com/drive/folders/1_J4P7yOnmAGpEe0yu1IoCD5B3mdu9fVs?usp=sharing>

Download the folder named COCO from this link (only for COCO):

<https://drive.google.com/drive/folders/1Ktok5eyOeQf0VD5ruqFBg1Stlx4oUeDz?usp=sharing>

Now the project folder will contain e folder named COCO which will contain the folders features, models, output and text.

For creating virtual environment we have used Anaconda. First download and install anaconda (Python 3.7 version) from <https://www.anaconda.com/download/>. Then navigate to the folder Image Caption Generator and run the file script.sh located inside the folder using the command (only in Linux) ./script.sh

Finally, activate the new environment created by the script.sh file by using the command:

***conda activate caption generator***

To install everything in Windows, follow these steps:

* Open anaconda prompt and create a conda virtual environment using the following command;

***conda create -n caption generator python=3.6***

* Activate the new environment:

***conda activate caption generator***

* Install all the dependencies using these commands:

***1. conda install -c anaconda scikit-learn***

***2. conda install -c conda-forge matplotlib***

***3. conda install -c anaconda pillow***

***4. conda install -c anaconda nltk***

***5. conda install -c anaconda pydot***

***6. conda install -c anaconda tensorflow-gpu***

***7. conda install -c anaconda keras-gpu***

* To use the cpu instead of gpu, install the first five dependencies listed above and then install the normal version of tensorflow and keras using the following commands:

***1. conda install -c anaconda tensorflow***

***2. conda install -c anaconda keras***

To check if everything has been installed correctly, navigate to the downloaded directory named Image Caption Generator and run the command python version.py

1. **Generating Caption of an Image (Manual option):**

**To generate caption of any image:**

* Put the image in the Image Caption Generator/Generator directory.
* Run the command python Generate Caption.py
* When input is prompted write the image file’s name (say example.jpg) as input.
* The image will be shown with the generated caption on top. You can save the image with caption from here. The caption will also be printed in the command prompt.

1. **Generating Caption of an Image (GUI option):**

* Open the source file “Generate\_Caption.py” on spyder3 editor.
* Press the run option after and wait for the GUI to arrive, processing time depends on your workstation.

1. **Reproducing The Results:**

* All required image and text data has already been pre-processed. To reproduce the result you need to train the model using the command python Train.py
* To evaluate the trained model on test data, run the command python Evaluate Model.py

1. **Results:**

* All the results and generated captions are available in the folder named Results.

***Device requirements:***

* Must be contain minimum 8GB RAM.
* Graphics card is an extra plus for image processing tasks.
* Nice to have a SSD (128GB and above).
* Processor must be core i5 (6th gen or above) but AMD processors can process the files super-fast.

Note: From the current market scenario the minimum configured workstation price having this requirements checked may start from BDT 60k goes up to 150k.  
  
Recent Apple MacBook M1 chip with 8‑core CPU, 8‑core GPU, and 16‑core Neural Engine, is super for those type of tasks.