CENG 796 - Peer-review form

Reviewed project ID: Group **03**

Reviewed project's title (title of the paper): Styleformer

Reviewer name(s): Ardan Yılmaz, Şahin Umutcan Üstündaş

Instructions:
- Answer = *Yes*, *No* or *Partial*.
- You may expand sections as necessary.
- For most questions, you do not need to add comments, unless the instructions tell you otherwise.
- "Notebook" refers to "Jupyter Notebook" file that is expected to be named as main.ipynb

Question	Answer	Comments
Contains a jupyter notebook file	Yes	
Notebook is located at <project_root>/main.ipynb	Yes	
Notebook's first section contains paper information (paper title, paper authors, and project group members' name & contact information) Some good examples: see group03, group10, group11 (and a couple of other groups).	Yes	
Notebook contains a section for hyper-parameters of the model.	Yes	The hyperparemeters were not listed explicitly in the notebook. The whole code resides on the notebook, so the hyperparameters were given implicitly in the Configs class.
Notebook contains a section for training & saving the model.	Yes	
Notebook contains a section (or a few sections) for loading a pre-trained model & computing qualitative samples/outputs.	Yes	There is a part where the authors load a pre-trained method, however, they only show quantitative results with the pre-trained model.
Notebook contains reproduced plots and/or tables, as declared.	Partial	The loss curves in the notebook seem to fail to learn, ie, both discriminator and generator losses stay constant, indicating a wrong implementation somewhere. The declared figures are shown during training. The final output figures from the model could be shown in the notebook as well. The targeted FID and IS scores are reported.
Notebook contains	Yes	

pre-computed outputs.		
Data is included and/or a proper download script is provided.	Yes	There is no data download script as the CIFAR10 is downloaded in the notebook through the PyTorch interface.
Notebook contains a section describing the difficulties encountered.	Partial	There are some vague points in the Discussion part. The authors claim that they had to switch to Colab's paid computing units, and with this switch they "observed a gap between LABML library's training outputs and the saved ones". There are some vague points in this sentence, such as what is meant by "LABML library's training output" and "saved ones". Is there a difference in the way they trained between Colab Free and Colab Computing Units, such as not using LABML in Colab Computing Units? Also, they just suggest that this change is caused because "Colab's computing unit was faster". This is not an adequate explanation, because "only faster computation" does not change the results. Did they change the number of epochs, batch size, or did they make changes to the architecture? Secondly, if the notebook they provided is not the improved version, that is trained on Colab's computing units, they should have provided that version. Finally, the authors discuss the unclear parts in the paper, and how they proceeded in these parts and the reasons behind their motives.. In terms of engineering, this is a good practice.
The paper has achieved its goals and/or explained what is missing.	Partial	The paper has not achieved its declared goals, yet they compared their own quantitative results with the original goals. They claim that with a correct model, they can converge to target goals.
The notebook contains a section that reproduces the figure(s) and table(s) declared in the goals.	Partial	The quantitative results are shown in a different section with a pretrained model, but the figures are generated while training. Thus, they are not reproducible without training.
The notebook also reports the original values of the targeted quantitative results, for comparison.	Yes	In the discussion part, they briefly report the values of the targeted quantitative results, and compare their own results.
MIT License is included.	Yes	
As the reviewer(s), you have read the paper & understood it.	Yes	
Implementation of the model seems correct.		The implemented Encoderlayer and EncoderBlock classes seem to be in line with Fig (2) and the specs in section 3.3. Attention Style Injection. In particular: (1) Modulation for self-attention: x = x * styles_in (Equation 1) (2) Demodulation for Q, K, V: - Modulate the weights - Calculate the demodulation weights: standard deviation (Equation 2)

		- Use the std to modulate the input are all as explained in the paper. Except, I do not see how exactly the given implementation matches the explanation of demodulation of encoder output and attention integration in the paper. Accordingly, Group 03 reports the lack of directions in the paper about "demodulating attention" in their implementation as comments, which really seems to be the case. Other specs in the paper, ie, increasing the number of heads in multi-head self-attention, pre-layer normalization, and modifying the residual connections are followed.
Notebook looks professional (in terms of notation, readability, etc.)		The notebook is too crowded with utility functions and model definitions. This causes the reader to traverse a long distance over the notebook. Also, warnings and error messages should be omitted in the notebook for better readability. The notation throughout the notebook is explanatory, the function definitions, variables and the modularity helps the reader to grasp the concepts easily.
Source code looks professional (in terms of coding style, comments, etc.)		In my opinion, the source code (utility functions, models, modules, etc.) should be in a separate file to achieve clarity in the notebook, and modularity overall. The comments were explanatory and helped us grasp the idea of the authors'. Also, not as a review but as a personal opinion, preparing the notebook to run both on Colab and local machines would be a good idea.

Additional comments:

Please write any suggestions that can content-wise and/or aesthetically improve the notebook or the source code.

You may also add your lengthy comments (eg. mathematical problems that you have found in the implementation) here, and, refer to this text in your comments above.