Deep Generative Models/Advanced Computer Vision
Final Term Project (100 points)

Mid-Presentation Video Submission: 9th May. 23:29
Mid-Presentation Video Watching + Q&A: 10th/12th May. Classes
Final Presentation Video Submission: 30th May. 23:29
Final Presentation video Watching + Q&A: 31st May/2nd Jun. Classes
Final Code+Data+Report Submission : 21th Jun. 23:29

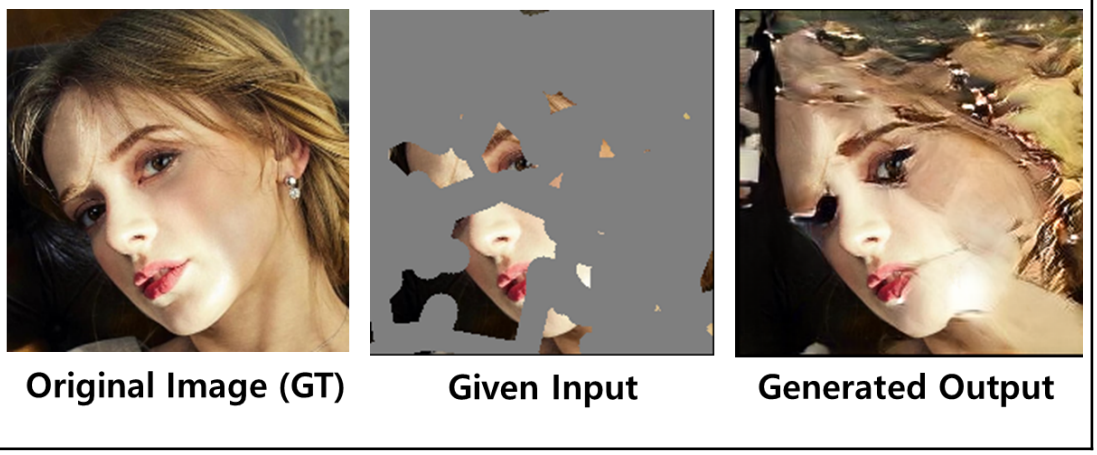
- Please use the team members and index in this link: https://docs.google.com/spreadsheets/d/1Lr22abZ5Mxi3K3Bh-Up1LCN3nVxg3Hawqfb4ciajHXQ/edit

Team information is no longer editable, if you want to, please send a mail to the instructor (srbaek@unist.ac.kr).

- **Testing data link:** https://codalab.lisn.upsaclay.fr/my/datasets/download/533e9f6e-ce4e-48a5-8d39-0f1fd605a7b9

- **CodaLab competition site**: https://codalab.lisn.upsaclay.fr/competitions/4088?secret_key=cfb5c99b-8533-46d6-af13-b87270be03ee

- The task is to conduct the in-painting on the given input to generate a complete human face image. We provide images and binary masks for erased regions.



Requirements:

. Need to propose a plausible solution to the problem.

. **Data usage**: Collect a reasonable amount of training data to solve the problem or re-use the publicly available dataset.

. **Code implementation:** Must implement train/test codes using “PyTorch” library. “Tensorflow/Keras” are not allowed.

. Input data: 600 test image inputs are given in the CodaLab competition site. If you login to the system, go to `Participate’ menu and click `Files’ tab. Then, you can download the data (43.7MB) by clicking `Public Data’ button.

- `input’ folder has input images, `masks’ folder contains mask images. Mask images have 0 or 1 values (0 values for erased pixels, 1 values for remaining pixels).

. **Model evaluation:** Generated outputs need be evaluated using the CodaLab competition site at least once before the final submission. The evaluation scores (PSNR, SSIM, LPIPS) need to be reported in the final report. Go to `Participate’ menu and click `Submit/View results’ tab to upload your .zip files. If your .zip file is in the correct format, the system will evaluate scores for your results.

- The example .zip files are in here: https://drive.google.com/file/d/1FjFo-NZGLImDIM5iWUwuNk_bk2Vk7FoD/view?usp=sharing it needs to contain 600 generated outputs in zip file.

- You can also refer this link for further details: https://codalab.lisn.upsaclay.fr/competitions/4088?secret_key=cfb5c99b-8533-46d6-af13-b87270be03ee#learn_the_details-evaluation

. Code reuse policy: You can re-use the code of the published paper; however you need to have the module that improves it. Your idea/presentation/final implementation would be evaluated by the parts proposed by yours.

. **Prize**: Top-2 teams will award the prize based on the rank in the CodaLab competition. The rank of the system will be decided based on the LPIPS score of the model. Additionally to the award, 250,000 won is reserved for two teams.

. **Presentation video submission**: Please upload the video in the google drive or any other online storage and share the link to srbaek@unist.ac.kr by 9th of May. and 30th of Jun. for the mid- and final-presentation, respectively. We will not receive any delayed videos: The delayed videos will get 0 score. The presentation has to be recorded in English. Example contents of the mid-presentation would be (Proposed idea (e.g. architecture, loss function), Data collection/usage plan, reference paper lists, and so on). Example contents of the final-presentation would be (Proposed method (mainly on planned vs. actual implementation), data collection examples/publicly available dataset lists, referred paper lists, intermediate results and etc.)

. **Evaluation guideline**:

1) Idea proposal (30%): The idea will be evaluated by technical correctness and creativity.
2) Training data (10%): Datasets used for training will be evaluated based on its quality. Students are allowed to use the publicly available datasets; and also available to use

self-collected datasets. The self-collected dataset needs to be accompanied with the final submission. (If the number of data is larger than 500, please accompany the first 500 data.)

3) Presentation (25%): There are mid- and final-presentations. Each team needs to submit 10-minute videos recorded by 9th of May and 30th of May to show their progress towards the final goal. We will turn on videos in our classes and will have the Q&A session. The presentation score will be evaluated by the quality of the presentation and Q&As. The video needs to be recorded in English, while the Q&A session will be in Korean.
4) Result (5%): CodaLab evaluation will be used to measure the generated images' quality. You can upload output results in the CodaLab competition site, then PSNR/SSIM/LPIPS will be measured by comparing them to their corresponding ground-truths (ie. original image). The ranking is decided based on the LPIPS measure. However it will only count 5% of the overall score. More important is achieving meaningful improvement rather than merely obtaining better performance.
5) Final implementation (30%): The train/test codes, report and readme file will be evaluated. The code readability will also be counted.

. **Final code + data + report submission**:

1. Send all files(.zip) via **Blackboard**. We will not receive any delayed submission.

2. In **StudentID_TeamNumber_Name_Final.zip** file, you need to include codes, data and reports. **Code and data could be submitted by only one member in each team, however the name of the member who submitted the code+data needs to be mentioned in each member's report.** For data submission, If you collect your own data and the number of data samples is larger than 500, please include the first 500 samples. If you use the publicly available dataset, then please include only the website link for downloading the data in the report.

3. **The 4-page report ('report.pdf' or 'report.docx') needs to be submitted individually for each team member. Contents of the reports could be similar among team members; however we are expecting that each team member writes down the report in his/her own words.** You can write reports either in Korean or English. Please remember the report needs to be exactly 4 pages. Example contents of the reports could be as follows:
    1) Motivation and description for proposed idea.
    2) Detailed method description (proposed deep architecture, loss functions and so on.)
    3) Presentation and analysis on the results.
    4) The evaluation scores (PSNR, SSIM, LPIPS) from the CodaLab system need to be reported.
    5) Description of the source code. (How to execute, code explanation)
    6) **Please include the below table in each person's report and clearly state the role and responsibilities of each member.**

Team member name	Role and responsibility	Contribution score

Seungryul Baek	Data collection, Implementation	30%
Ian Goodfellow	Data collection,	30%
Yann Lecun	Idea propose, Implementation	30%
Yoshua Bengio	Implementation	10%

4. Below is the example for the submission.

<Example>

202010407_Team0_SeungryulBaek_Final.zip
|
|--- (code folder)
|--- (data folder)
|--- report.pdf or .docx