Machine Learning

Homework 2

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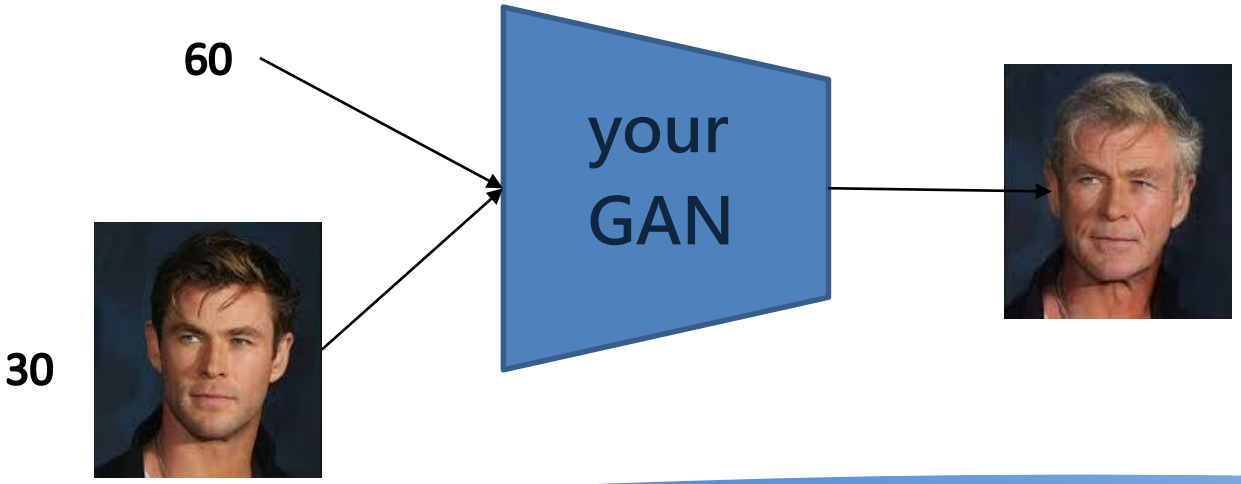
Homework2 – Generative Adversarial Network

- **Training a GAN from scratch**
- **Generating aging face images**
- **Two inputs: a face image**
  desired age {20~70}
- **One output: aging image**
- **Ex:**



Homework2 – Dataset

- **Please download the dataset from the address below for training:**

  https://drive.google.com/drive/folders/1tg-Ur7d4vk1T8Bn0pPpUSQPxlPGBlGfv

  (download the “thumbnails128x128” dir

  Training data: 00000~64999,

  Testing data: 65000~69999)

- **Please download the age label for the training data from the following link.**

  https://drive.google.com/file/d/1j-PVkbxkKkxKeq2YsT2rydo2yuS5KWBy/view?usp=sharing

Homework2 – Training

- **Use deep learning frameworks that support python3**
- **You can implement some state-of-the-art architectures, but you have to write your own code.**
- **DO NOT USE EXTERNAL DATASET.**

Homework2 – Submission

- **Workflow:**
  - Generate aging image of the testing data with specified ages.
  - Reconstruct the image with original age.
  - Submit both generated images (aging & reconstructed)
- **The age label of testing data and the desired ages will be released one week before the deadline. You need to submit the generated pairs of all images in testing data.**

Homework2 – Grading

- **Evaluation metrics:**
  - Age loss:

    cross-entropy loss of

    (specified age, detected age of the generated image)

  ※We apply the age detector same as the one for generating ground truth, so the data distribution is held.
  - Reconstruction loss:

    L1-loss of

    (original image, reconstructed image)
- **Two losses of your submission image pairs will be calculated and ranked.**

Homework2 – Deadlines

- **SUBMISSION DEADLINE: 6/12(Fri) 23:55**
- **Testing data will be released on 6/5(Fri)**
- **Create a directory named as {studentID} to the following URL and upload your pretrained weight :**

https://drive.google.com/drive/folders/1kJizBP52Zx9oMzOjK5Mt7BaVg6YZUh2_?usp=sharing

- **Submission files on New E3:**

  {studentID}_img.zip

  {studentID}_src.zip

  e.g., 0850230_img.zip, 0850230_src.zip

Homework2 – Deadlines(Cont.)

- **For {studentID}_img.zip, it should contain a directory named "{studentID}_img" containing your generated images named as:{image name}_aged.png, {image name}_rec.png……**

  e.g. : 65000_aged.png, 65000_rec.png ……

- **For {studentID}_src.zip, it should contain a directory named "{studentID}_src" containing your code for training model and a readme.txt explaining how to re-implement your work.**

Homework2

- **If you have any computing resource requirements or you have any question about this homework, please e-mail to lami860516.eic08g@nctu.edu.tw and lynn97.ee08g@nctu.edu.tw**