Machine Learning 2024 spring

Final Project

Deadline: 2024.6.21

Please complete the final project in groups of one or two people. Groups of three people are also acceptable, but the more people in the group, the stricter the grading will be. The grading criteria for one-person and two-person groups are the same.

In the final project, you need to train a model to conduct an image classification of the images of adults and children. Please download the dataset we uploaded on the E3 (the compressed file includes the training data and testing data). Please use the toolbox of Pytorch to build your model.

Figure 1: An illustration of images of adults and children.

Try to achieve a higher accuracy. The higher the accuracy, the higher the score. Moreover, you need to consider both model complexity (number of parameters) and computational complexity (FLOPs). Approaches with smaller models and faster computation speed for testing will receive higher scores.

Homework Rules and Grading Policy

Homework will be graded by:

1. Presentation
   - Each group needs to complete a 20-minute presentation to explain how your group completed the final project and the results in the form of a video.
   - Each group needs to upload their video to YouTube and submit the video link on E3.
2. Report
   You need to present the following items in your report.
   - How did you design your model for this final project?
   - Use images or tables to present the impact of training time, model complexity, or other factors on the accuracy during training and testing.
   - Anything else you want to discuss.
   - Compare your proposed model with other methods. (optional)
3. Demonstration

Upload:

- [Web] E3
- Each group submits one compressed file of the final project.
- [File Name] Final Project_StudentID.zip (ex: Final Project_1234567.zip)
  The file should include your code, report and presentation slides.
- The report, presentation slides and video link can be submitted by 23:59 on 6/22.

Remind:

1. Your report should be in the format of .pdf. Your presentation slides can be in the format of .pdf or .ppt.
2. Deadline:
   If you have a late submission by only 3 days (Last deadline: 6/24), you will only get 70% of the score. We DO NOT accept any late submissions after 3 days after the deadline.

3. We encourage open discussion to ensure program correctness, but plagiarism is strictly prohibited. Violators will receive a score of 0.

   Please note, we will check if your code matches any code available on the internet for this final project. If the similarity is over 70%, your group will receive a score of 0.

Demonstration:

1. Please save your well-trained model before the demo.
2. The date for the demo is 6/21. Before each team's demo, each team need to upload your code on E3.
3. In the demo part, you need to test your model with the additional test data provided by TAs. You will be required to evaluate the testing accuracy of this demo dataset and calculate FLOPs and the number of parameters of your model. (You can use functions to alculate FLOPs and the number of parameters.)

   Finally, upload your results (testing accuracy, FLOPs and the number of parameters) on E3.
4. Your submitted program should be executable directly (with the dataset and program placed in the same folder).