

Midterm Project

100 Points

Overview: The goal of the midterm project is to design an experiment relating to CNN scene classification. You will build upon your results from Assignments 7 through 9 by augmenting your model and/or training process and comparing the results to those obtained in Assignment 9. Some example modifications include:

1. Using a different CNN architecture (e.g., ResNet, VGGNet, MobileNet, etc.).
2. Reconfiguring your architecture to include residual connections.
3. Using different activation functions.
4. Augmenting the training process by using a learning rate scheduler.
5. Experimenting with different loss function configurations.
6. Implementing transfer learning.
7. Incorporating dropouts.
8. Incorporating data augmentations.

You must propose a specific research question and augment your workflow to answer this question. The instructor must approve your proposed research question.

Deliverables

1. An .ipynb file that contains all of the code from Assignments 7 through 9, which will represent your baseline experiment.
2. An .ipynb file that contains all of the code for your new experiment/configuration.
3. A research poster generated using a graphics software, such as Power Point, Publisher, InkScape, Illustrator, and published to a PDF file.

Grading

1. Your research question is clearly stated, and your experiment is designed such that it addresses the research question. (10 Points)
2. Your code is correct and commented throughout, and the experiment is correctly implemented. (20 Points)
3. Research poster
 - a. The poster is well-designed, organized, and uses space well. The poster should be presentation quality (ready to be taken to a meeting or conference) (20 Points)
 - b. The input data and methods are defined/explained on the poster. (10 Points)
 - c. The results are well presented. (20 Points)
 - d. Key findings and conclusions are clear, well explained, and supported by your data. (10 Points)
 - e. All included graphics/figures and tables are of high quality and well designed. (10 Points)

Note: If you would like to pitch a midterm project using a different dataset, that is acceptable. However, you will still need to perform some model comparisons, generate code, and produce a poster.