

Assignment 2 [100 Points]

Due March 1, 2023 11:59 PM

Problem 1 - Logistic Regression [70 points] Download A2 P1.py on Canvas and rename it as A2_P1_[your AccessID].py. Please code the missing part to implement logistic regression with TensorFlow. Use softmax to estimate the probabilities, cross-entropy loss, or log loss, as the loss function, and Adam to optimize the loss function. Record training loss and accuracy every 50 iterations. Save checkpoints every 2000 iterations.

Train and test your model. Report your result as a comment in the Python code. Your accuracy must be at least 85%. After training, run Tensorboard and make a screenshot of your Tensorboard showed on your browser and save image as A2_P1_TB [your accessID].jpg.

Submit both the modified .py file and .jpg files to Canvas.

Problem 2 - Sequential Model [30 points] As a coder, you are asked to code a sequential model proposed by researchers from a local company, which is used to remove noise in images. The architecture of network is showed below:

- Layer 1 - Convolutional layer [number of filters=32, kernel size=(4, 4)]
- Layer 2 - Max polling layer [pool size=(2, 2)]
- Layer 3 - Convolutional layer [number of filters=64, kernel size=(4, 4)]
- Layer 4 - Max polling layer [pool size=(2, 2)]
- Layer 5 - Fully connected layer [number of units=512]
- Layer 6 - Fully connected layer [number of units=10]
- Layer 7 - Fully connected layer [number of units=512]
- Layer 8 - Convolutional Transpose layer [number of filters=64, kernel size=(3, 3)]
- Layer 9 - Upsampling layer [size=(2, 2)]
- Layer 10 - Convolutional Transpose layer [number of filters=32, kernel size=(3, 3)]
- Layer 11 - Upsampling layer [size=(2, 2)]
- Layer 12 - Convolutional Transpose layer [number of filters=1, kernel size=1]

Download the file from Canvas, rename the files as A2-P2-[your AccessID].py. Code the missing part in both files.

Train and test your model. Rename the output result image as A2-P2-[your AccessID].jpg.

Submit both the modified .py file and .jpg file to Canvas.

You can add some statements to assist in completing this project. But do NOT delete/modify the original content of the files. The underlined part is what you need to complete. Submit all your files to Canvas (separated files, not zipped please).