Machine Learning

ECE 4370 / ECE 5332

Project 6

1. Design and train a convolutional neural network (CNN) to classify the dataset of C. elegans worms used in Project 4 into two classes: 1-worm (t=1), and 2- no worm (t=0).
2. Write a brief report in tabular form that includes:
    a. Source of libraries used for CNN implementation (e.g., **Matlab 202x, TensorFlow 2.x with Python 3.x, or PyTorch 1.x with Python 3.x**)
    b. Complexity of network employed in terms of the number of learnable parameters.
    c. Training information
    d. Testing information presented as a confusion matrix and the classification accuracy
    e. Training and testing execution times
3. Your code must conform to the following format so that it can be tested on an independent dataset.
    a. Input:
        i. Name of the directory path containing test images
        ii. Trained model
    b. Output:
        i. Two-column list with the first column indicating the image filenames and the second column indicating the corresponding label: 1 (worm) or 0 (no worm)
        ii. Total number of images with labels 1 and 0
4. This is a group project. No more than three students are to form a group and make a single submission.

Archive

- **.m or .py file(s)**
- **report in pdf format**
- **trained model**

Name your file as Lastname1_Lastname2_Lastname3_Project6.zip and upload to Blackboard prior to the deadline.