Project 02 – Networks

Arthur J. Redfern
arthur.redfern@utdallas.edu
Mar 22, 2021

---

1 Logistics

- Assigned Mar 22, 2021 and due Apr 12, 2021
- This is an individual project, no help from others is allowed
- The use of any and all online resources is allowed but mildly discouraged; everything you need is available on the class GitHub page and it's likely that you'll find this project easier if you start there

2 Goals

- The network section of the course built on the theory introduced in the math section and looked at the practice of the design, training and implementation of xNNs; specifically
    - An encoder (stem and body) decoder (head) approach to the design of CNNs for image classification based on common stem and head structures and serial, parallel, dense and residual body building blocks
    - A comprehensive look at training methods for improving convergence and improving generalization via regularization
    - A practical look at implementation including methods for estimating performance and methods for improving it via network, software and hardware design
- In this project you will use the above techniques to design, train and estimate the complexity of a CNN for image classification
- You will also gain skills in writing conference style papers where you report the above design, training and implementation results, among other things

3 Project

Do the following:

- Follow the instructions in the comment block at the top of the provided skeleton code.
- Replace all blue text in the provided skeleton Word document.

4 What To Turn In Via eLearning

Follow the instructions in the comment block at the top of the provided skeleton code for the requested Python files to turn in. Note: no zip files, no Jupyter / iPython notebooks, … I should be able to cut and paste the Python code you submit in the .py file(s) into Google Colab and reproduce the results you provided at the top of your Python file(s).

In addition to the code, turn in a pdf of the Word document. This can commonly be done via saving as a pdf or via printing to a pdf.