ECE 57000: Artificial Intelligence Assignment Instructions

Introduction

The goal of lab assignments is to familiarize you with various tools that are used in AI/ML research and implementation. In particular, we will focus on training and testing machine learning models in Python using packages such Numpy, Sci-kit Learn, Pytorch, and Keras. We will implement our code using the Jupyter notebook environment in Google's Colaboratory or simply Colab. Colab is a cloud-based system with an interactive coding environment that is easy to use and widely available. Most of the lab instructions are specified in the Jupyter notebook files so you will need to open these in Colab. **All solutions to the lab assignments should be implemented in Python.**

Environment setup

For these assignments, we will use Google Colab which is a Jupyter notebook environment that does not need any setup on your personal PC/MAC and the it runs entirely in the cloud. Since Colab runs on cloud-based servers, it is important to run assignments on computers that have an internet connection. Here are the steps to open assignments via Colab.
1. Download the assignment files (.zip file) from the class website and save them to your computers.
2. Set up a Google account if you do not already have one and log into Google Drive using your Google account.
3. Upload the Jupyter notebook files in the assignments to your Google Drive. You should be able to do this by right-clicking and select **"Upload files".**
4. Double click the Jupyter notebook files and then select **"Open with Colaboratory"** on the top middle of your web page. This should direct you to the Colab working space.

(Not recommended) If you prefer to use your own computers' python environment, you are welcome to do so. **However, the instructor and TA will not provide any technical support for this option.** You will be responsible for configuring and installing all necessary packages with the same versions as on Colab. **Any delays in submission or other issues arising from using your own environment will be your responsibility. All testing of your code will be done on Colab.**

Colab instructions

Colab uses Jupyter notebook environment as its core; therefore, if you are already familiar with Jupyter notebook, you should find Colab pretty easy to use. Here are some instructions and tips on how to use Colab.
1. The executable code blocks are in dark shaded areas. You can add code block by clicking **+Code** on the top left page right below the ribbon. You can further run all the commands in one block or cell by either click the **Play icon** in the upper-left corner of your clock or type **Ctrl/Cmd + Enter**.
2. Sometimes it is helpful and even necessary to run all blocks of code before you run the correct code block. You can do this by select **Runtime → Run before.**

3. You also have the access for GPU accelerators. You can do this by finding on Menu, select t
   Edit → Notebook Settings → Hardware Accelerator → GPU

Assignment submission

You should only submit the **PDF version** of your **"Assignments_XX_Exercise.ipynb"** notebook. It is recommended to do this step by using **Chrome**. Here is how you create the PDF.

1. For each exercise, write your code under the one block as provided in the skeleton.
2. Run all the blocks on your **"Assignments_XX_Exercise.ipynb"** notebooks so that all the outputs are displayed after each block.
3. Please **close the content list** on the left side, and on Menu, select **File → Print**
4. Change the print destination to **Save as pdf to** download the pdf version of your Jupyter notebook.