

# COSC 480 – Final Project

Task: Using keras, TensorFlow, and Python, create a solution for a topic of your (and your team's) choosing.

For this project you will create a python program that will do the following things:

1.) In your teams (teams will be chosen in class on November 1<sup>st</sup>) you will choose a question to answer using a deep learning model. You may only choose from the following broad topics:

- Image Recognition
- Image Manipulation
- Speech Recognition
- Image Tracking
- Text Summarization
- Forecasting

Topics and questions are first-come first-serve and must be emailed to me by your group coordinator and approved by November 8<sup>th</sup> at 4pm.

2.) **Group Coordinator Role:** your team will choose a single person to be the coordinator for your group. This person is responsible for all communication with me, setting up the GitHub repository, and for gathering the files for the turn in at the end of the project.

2.) Develop a full deep learning network solution for your proposed question. There are no restrictions in regard to what libraries you use, what data you use, or what specific ANN model you choose, only that it must be a deep learning solution for your problem and it must be implemented using keras and TensorFlow. You are not required to use Jupyter for the code, but you are required to ensure that the solution is well-commented.

If you are using external data sources, or external libraries, you must provide me an installation guide as a plain text (.txt) file. This should give me a step-by-step guide to installing any extra packages, and where exactly to place your data sources, as well as a link to retrieve your data sources.

All code must be hosted on GitHub, hosted on a repository that the group coordinator has set up. I will be looking at the commit logs for each project as part of determining the participation of each student in the groups. **All students are required to participate in the coding portion of the project.** GitHub projects must be set up and add me (ripark) as a collaborator by November 13<sup>th</sup> at 4pm.

3.) Write a minimum 5-pages of content academic paper (single-spaced, AMS citation

style, Times New Roman, 1" margins, 3<sup>rd</sup> person perspective). The paper will need to include the following elements:

- Current state of the art with examples of similar projects – you must find and cite at least 5 other projects. No wiki-based sources are allowed for this paper.
- A detailed summary of your implementation and justification of your choices in your model.
- A report on the results of your model.
- A reflection on the successes and failures of your attempt.
- A future work section.
- A bibliography (not included in the 5 pages of content).

You are required to go to the Writing Center at least once for revisions to your drafts before you submit your final project. You will need to make an appointment once your paper is complete and once you have finished with your appointment, you are required to provide me the appointment summary provided by the Writing Center. As a note, they are especially busy during the final weeks of classes, so do not delay writing the draft and making the appointment! The rubric I will be using to evaluate your paper will be available on the course website.

4.) All turnins must be on GitHub by **6pm on December 10<sup>th</sup> (see below for what is required)**. **No slip days allowed for this project**. The header comment for your notebook(s)/source files should include:

File name

Names of all members of the group

Project name and description

Any special execution instruction (extra libraries you had to install, etc.)

Date

5.) **Presentations:** Your final in this course is a presentation on your projects. Each team will present for 20 minutes with 10 minutes of question and answer. I expect a professional, well-prepared, and practiced presentation. You are expected to be in business casual dress. The rubric I will be using to evaluate your presentation will be available on the course website. Failure to attend the presentations will result in a 0 on all aspects of this project.

6.) **Team Reviews:** Each member of the team must rate themselves as well as all other members of your group via the group review rubric posted to the course website. You must email that to me by 10pm on December 10<sup>th</sup>.

### **Grade Breakdown:**

Project Percentages (40% of your final grade)

Code – 60%

Paper – 20%

Team Review – 20%

Presentation –10% of your final grade

I will be evaluating your code based on its functionality and how successful you were in answering your question. Obviously, failure to create working code, or not providing me enough information to get your project working, will result in a failing grade.

**Some Potential Deductions:**

- 10 Missing a deadline other than the final deadlines
- 10 per instance of not following the instructions laid out in this file
- 20 Lack of comments
- 25 Lack of GitHub commits (individual)
- 15 Incorrect formatting of the paper
- 10 Citations, but not in the correct format (American Mathematical Society). Citations must be included inline.
- 10 Missing team review
- 20 Not dressing appropriately for the presentation
- 20 Lack of balance amongst members of the team for the presentation
- 15 Technical issues due to lack of preparation
- 20 Presentation too short/too long
- 100 No showing the presentation

**Deadlines:**

**Topic and question – 11/8, 4pm**

**Project GitHub setup – 11/13, 4pm**

**Turn in requirements on GitHub (Due 12/10, 6pm):**

**Presentation slides.**

**Any and all notebooks/source files required to run your model.**

**Installation guide (if your solution requires additional libraries or external data).**

**Final paper.**

**Copy of the Writing Center appointment report.**

**Turn in requirement for each group member (Due 12/10, 10pm):**

**Team evaluation rubric (see website).**