



## 3546 TERM PROJECT

The 3546 Term Project is your opportunity to showcase what you've learned in the course. Your objective is to design and train a deep neural net for an application of your choosing. You may use Tensorflow, Keras or PyTorch (or another Deep Learning software package if you prefer). You can use transfer learning to speed up training of the network.

Some examples of projects that would be appropriate:

- A currently active competition such as Kaggle where your model uses a deep neural net
- Build a network that generates synthetic newspaper articles word-by-word or letter-by-letter after being trained on examples of actual text
- Build a network that generates new musical material in the style of training examples
- Style Transfer: Transfer image style
- Music Generation: Generate a song
- Image generation: Generate image of a house or generate a face
- Voice to text: From a conversation generate a transcript and identify the person(s) who is talking
- Virtual lock: Image (front and side) and voice recognition to unlock access

### Public Sample Final Term Projects

- [Semantic Segmentation](#)
- [Generative Models](#)
- [Text Generation](#)

### Data Sources

- You can use a publicly available dataset. Many are available through Kaggle, government open data web sites, etc.
- If you choose to use an actual business dataset you must get written approval from the owner of the data to use it

### Topic Approval

Prior instructor approval of your choice of project is not required for any of the suggestions above. If you would like to undertake a different topic please submit your idea to the instructor via email for feedback and approval by Week 8 and preferably earlier.

### Group Submissions

You can submit either an individual or team project with up to three team members. Only one submission is required per team. The team members' names must be clearly marked on the submission.

## **Deliverables**

There are two deliverables: a report and a presentation. The report will be in the form of a Jupyter notebook and will include all of your code and analysis.

## **Requirements & Due Dates**

You must submit your project as a fully-executed Jupyter notebook. It is due the second-last class of the term. The last two meetings of the term are reserved for presentations. If you have a preferred date to present please send an email to the instructor(s) with your preference. Otherwise a date will be assigned two weeks in advance of the first presentations.

Unlike prior courses in the Data Science or AI certificate programs, the project need not be in the style of a management report. The emphasis here is on working with Tensorflow (or your chosen toolset) to build a deep model of your choosing.

The presentation should be five PowerPoint slides long (excluding title slide). You will only have five minutes to present, or if working in groups, you will have 5 minutes for each member of your group (e.g. groups of two will have a total of 10 minutes). This time will go by quickly, so please rehearse and time your presentation in advance. The presentation is due via upload to Quercus.

## **Marking Scheme**

Marks will be allocated as follows for a total out of 40:

- Difficulty/Novelty – 10 marks
  - How challenging a project was it?
  - Is this an interesting and different analysis?
- Report readability – 10 marks
  - Spelling
  - Explanation of use of technical terms
  - Formatting
  - Easy to follow
- Correctness and thoroughness of model and its analysis – 20 marks
  - Data preparation
  - Use of a proper training and test set
  - Selection of appropriate layers
  - Measurement of model performance



- Regularization
- Overall breadth and depth of commentary/explanation