



**THE GEORGE
WASHINGTON
UNIVERSITY**
WASHINGTON, DC

**Natural Language
Processing
Final Project
October 22, 2023
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Due: *Check the Syllabus***

Final Project

The objective of the final project is to apply what you have learned in this course to a real world problem – a problem in your area of interest. You can apply any natural language processing methods and models or softwares that we cover in the course. Below is a list of websites that contain datasets and pretrained models that might be suitable for nlp projects.

Websites with datasets

List of key concept:

- **Pretrained NLP** (Transformers Based Networks)
- **Recurrent Network** (Any RNN model LSTM, GRU)
- **Rule Based Models** (Naive Bayes, Logistic Regression,)
- **Interpretability and Explainability** (LIME, SHAPP, Integrated Gradient(IG))
- **Autoencoder**

You can search papers with codes and do literature review. Also, you can find data either in Google data search or Kaggle competition website.

Trending Research

<https://paperswithcode.com/>

Dataset Search

<https://datasetsearch.research.google.com/>

1 Group

1.1 Group Proposal

After you have selected a topic, a model, and a data set, submit a proposal of what you plan to do for the project. The proposal should be a few hundred words, and should address the following items.

- What problem did you select and why did you select it?
- What database/dataset will you use?
- What NLP methods will you pick from the concept list? Will it be a classical model or will you have to customize it?
- What packages are you planning to use? Why?
- What NLP tasks will you work on?
- How will you judge the performance of the model? What metrics will you use?
- Provide a rough schedule for completing the project.

1.2 Group Presentation

You will give a 15 to 20 minute presentation of your final project.

1.3 Group Final Report

1. Introduction. An overview of the project and an outline of the report.
2. Description of the data set.
3. Description of the NLP model and what kind of algorithm did you use. Provide some background information on the development of the algorithm and include necessary equations and figures.
4. Experimental setup. Describe how you are going to use the data to train and test the model. Explain how you will implement the model in the chosen framework and how you will judge the performance.
5. What kind of hyper-parameters did you search on? (e.g., learning rate)? How will you detect/prevent overfitting and extrapolation?
6. Results. Describe the results of your experiments, using figures and tables wherever possible. Include all results (including all figures and tables) in the main body of the report, not in appendices. Provide an explanation of each figure and table that you include. Your discussions in this section will be the most important part of the report.
7. Summary and conclusions. Summarize the results you obtained, explain what you have learned, and suggest improvements that could be made in the future.

8. References. In addition to references used for background information or for the written portion, you should provide the links to the websites or github repos you borrowed code from.

1.4 Deliverables

The Group Proposal will be due 2 weeks after final project description is posted. For Group Final Report and Group Presentation check the syllabus.

- Make a folder and name it [Group-Proposal](#). Write your final group proposal in a word document and save it as a PDF file. Place the group proposal in the [Group-Proposal](#) Folder.
- Make a folder and name it [Final-Group-Project-Report](#). Write your final group project report in a word document and save it as a PDF file. Move it to the [Final-Group-Project-Report](#) folder.
- Make a folder and name it [Final-Group-Presentation](#). Create a powerpoint presentation for your group presentation. Save the presentation as a PDF file and move it to the [Final-Group-Presentation](#) folder.
- Make a new folder and name it [Code](#). Save all of your codes for the final project in it. For example, if you write code for multiple parts of the project, name them properly and write a [README](#) file for it. This [README](#) file should explain what order codes need to be run in (e.g., codes to fetch data should be run first, then code to preprocess, and then modeling, etc.) and a short description of what each script does.
- Have one group member create a GitHub repository for the project and name it [Final-Project-GroupX](#) where X is your group number (The rest of the group members can be added in as collaborators and fork it, so you only need one repo for the project). Then, push the 4 folders that we discussed above into the repository that you created. You should have a markdown file (`README.md`) that explains the structure of the repository and how it works. Make it as clear as possible.

2 Individual

2.1 Individual Final Report

1. Introduction. An overview of the project and an outline of the shared work.
2. Description of your individual work. Provide some background information on the development of the algorithm and include necessary equations and figures.
3. Describe the portion of the work that you did on the project in detail. It can be figures, codes, explanation, pre-processing, training, etc.
4. Results. Describe the results of your experiments, using figures and tables wherever possible. Include all results (including all figures and tables) in the main body of the report, not in appendices. Provide an explanation of each figure and table that you include. Your discussions in this section will be the most important part of the report.
5. Summary and conclusions. Summarize the results you obtained, explain what you have learned, and suggest improvements that could be made in the future.
6. Calculate the percentage of the code that you found or copied from the internet. For example, if you used 50 lines of code from the internet and then you modified 10 of lines and added another 15 lines of your own code, the percentage will be $\frac{50 - 10}{50 + 15} \times 100$.
7. References.

2.2 Deliverables

- Write your individual report in a word document for your contributions to the final project.
- Save this word document as a **Single PDF file** and rename the PDF file as **firstname-lastname-final-project**. Then create a folder titled **Individual-Final-Project-Report** and move the PDF file of your report into it.
- Create a new folder titled **Code** and then put all of your codes into to it. For example, if you wrote code for a portion of the project, put the code in a script, `mywork.py`, and move it into the **Code** folder.
- Make a new folder and name it **firstname-lastname-individual-project**. Then, move the above two folders into this folder. Finally add this folder to the GitHub Repo.
- Failing to do these steps properly will result in a **reduced grade**.

3 Uploading

- **One member of the group have to upload the GitHub repo link (includes all the folders above) into BlackBoard. Please check that the link is working before uploading it.**