

CSE-6363 Fall 2024
Sections: 003, 004
Machine Learning Projects

1. Choose one of the following topics for your project.
2. Once you have a topic, find at least three state of the art research papers about your topic and use them as your references to define what you will do in your own project.
 - a. You can recreate what was done in that project but with your own code and tools.
 - b. You can add to what was done in that project to enhance the references results.
 - c. DO NOT just copy any code from the internet, you can use ideas from the internet but you need to make a reference to that work.
3. Write a couple of paragraphs describing your project with the following content.
 - a. What are you going to do in your project?
 - b. Are you recreating the work of a research paper?
 - c. Are you adding something original to what was done in your references?
 - i. What is that?
 - d. Are you combining what was done in several references to improve their work?
4. Create a timeline for your project showing at least the following steps.
 - a. Project definition
 - i. Title & description.
 - b. Data preparation
 - i. Data cleaning & preprocessing
 - c. Implementation of the machine learning component (classification, regression, clustering, object identification, semantic segmentation, etc.)
 - d. Evaluation
 - i. How are you going to evaluate your project?
 - ii. Hypothesis testing should be done when applicable.
 - e. Write your paper (more on this will be posted later).
5. Download the specified dataset and start working in your project!

Topic 1

- NLP – Sentiment Analysis (Deep Learning)
 - o Recommended dataset

- Large movie review: <http://ai.stanford.edu/~amaas/data/sentiment/>

Semantic Search (Deep Learning)

☐ Recommended dataset

- Large movie review: <http://ai.stanford.edu/~amaas/data/sentiment/>

Topic 2

- Computer Vision with Deep Learning
 - Object detection on images or real time object detection on videos
 - Semantic segmentation on images
 - Recommended dataset
 - COCO: <http://cocodataset.org/#home>

PROJECT SUBMISSIONS

- **Review 1**
 - Project topic
 - Project description
 - Research papers references
 - Timeline
 - Submission should include:
 - Word document containing the information about your project topic, description, research papers references, and timeline
 - Presentation in class (the use of a ppt presentation is recommended)
- **Review 2**
 - Data preparation
 - Submission should include:
 - Word document containing a description of the data preparation process
 - Code used for the data preparation task (data cleaning and preprocessing)
 - Presentation in class (the use of a ppt presentation is recommended)
- **Review 3**
 - Implementation

- Submission should include:
 - Word document containing a description of the implementation of your project. You should also describe how your project is different to the references used:
 - Did you do the same that was done in the references?
 - Any enhancement to the work described in the references?
 - The code of the machine learning component of your project (you don't have to submit the final version of your code at this time but only what you have done until now)
- Presentation in class (the use of a ppt presentation is recommended)
- **Final Presentation**
 - Completed project
 - Submission should include:
 - Presentation of your project to the Professor
 - Code for all your project
 - Schedule a demo with your TA
 - Presentation in class (the use of a ppt presentation is mandatory)
- **Paper Submission**
 - Submission should include:
 - Your final paper in the required format and with the required content (I will describe this in detail latter).

NOTES

1. Do not copy code from the internet. You can take ideas but create your own code.
2. Our TA will verify that you do not use code from the internet.