

# PRACTICAL ASSIGNMENT

## Module

[NLP Essential]

## Module Code

AI43004FP

## Duration

8 hours

**Title:** Perform Natural Language Processing (NLP) data collection, AI training and inference

### Tools, Equipment and Materials:

- Computer with Internet access
- Documentation & Presentation Software

### Instructions:

1. You are to perform NLP data collection, AI training and inference of a case study individually.
2. Analyse and explore the case study provided.
3. There are two parts to this assignment. Part 1: Data loading and preliminary inspection. With reference to the AI project cycle, perform data collection, training and inference of an NLP assignment. Part 2: Perform AI Natural Language Inference.
4. AI project cycle – Problem scoping, Data acquisition, Data exploration, Modelling, Evaluation and Deployment.

### Deliverables:

You have to submit one complete set of items and present the assignment to demonstrate the application to the Lecturer upon completion of the assignment.

You have to zip and submit one set of items consists of

- a. Python code,
- b. Presentation slides.
- c. There should be only one submission per person.
- d. Ensure that the following contents are included in the presentation slide.

1	Cover slide including project title and student name.
2	Problem statement using 4Ws problem canvas.
3	Part 1: Data loading and preliminary inspection.
4	Part 2: Perform AI Natural Language Inference.

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**NLP Essential Scenario****Sentiment Analysis Online Movie Reviews**

In a recent market research by IBM, almost one-third of IT professionals surveyed globally say their business is using Artificial Intelligence (AI). The survey reported almost half of businesses today are now using applications powered by natural language processing (NLP).

NLP, specifically 'Sentiment Analysis', can provide a key business advantage by abstracting from unstructured text data the negative or positive attitude of the writer/author. This crucial insight can help turn web data into market intelligence for the business.

A request has been received from the web development department to add 'Sentiment Analysis' feature to a movie reviews page.

The insights from the sentiment analysis will be used to promote more popular movies.

In this project, you are tasked to create a prototype NLP project that is capable of 'Sentiment Analysis' from movie reviews.

**Instruction to students:**

Please answer ALL the questions. You may refer to online documentation (e.g. keras, pandas, etc) for help on syntax. No copying of codes wholesale is allowed.

Note: Use a `random_state = 42` where appropriate

The assignment will require the following steps:

**Part 1: Data loading and preliminary inspection**

1. Problem scoping.
  - 1.1. Defining problem statement using 4Ws (Who, What, Where, Why) problem canvas from the project scenario.
2. Data acquisition and Data exploration.
  - 2.1. Importing various modules.

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- 2.2. Preparing the data.
  - 2.2.1. Collect relevant data.
  - 2.2.2. Preprocess Text.
  - 2.2.3. Split it into train, validate, and test datasets.
  - 2.2.4. Perform Feature Extraction Using TF-IDF.
- 3. Modelling.
  - 3.1. Build a model based on the given sample of Neural Network.
  - 3.2. Train the model.
- 4. Evaluation and Deployment.
  - 4.1. Evaluate the model.

Part 2: Perform AI Natural Language Inference

- 5. Create Model Using Neural Networks.
- 6. Test For User input Text.
- 7. Apply Cosine Similarity To Find Similar Texts.

- END-

