Practical Task 1: Analyzing Student Feedback Using Artificial Intelligence techniques in Python

Task Description:

As part of the application process, we would like you to showcase your proficiency in Artificial Intelligence techniques using python by completing a practical task involving the analysis of student feedback. This task is designed to assess your ability to work with text data, perform NLP tasks, and extract insights using Python.

Dataset:

We have provided you with a dataset containing student feedback comments collected from course evaluations. Each feedback comment is associated with a course and includes information about the semester and student's program. Your task is to analyze the feedback to gain insights into student sentiments and identify common themes.

Requirements:

Data Preprocessing:

- Load and preprocess the text data using Python.

Sentiment Analysis:

- Perform sentiment analysis on the feedback comments to determine the overall sentiment (positive, negative, neutral) of each comment.
- Create visualizations or summary statistics to present the distribution of sentiment.

Topic Modeling:

- Apply a topic modeling technique (e.g., Latent Dirichlet Allocation) to identify common themes or topics in the feedback.
- Display the identified topics along with some representative keywords.

Opinion Mining:

- Extract opinions and attitudes expressed in students' feedback.

Insights and Recommendations:

- Based on the sentiment analysis and topic modeling, provide insights into areas of strength and areas for improvement in the courses.
- Suggest potential actions based on the identified topics and sentiments.

Presentation:

- Prepare a concise report or presentation summarizing your analysis and findings.
- Include visualizations, sentiment distribution, topic breakdown, and your interpretations.

Guidelines:

- Utilize Python libraries such as NLTK, spaCy, or scikit-learn for NLP tasks.
- Apply appropriate techniques for text preprocessing, sentiment analysis, and topic modeling.
- Clearly document your code and analysis steps for easy understanding.

Submission:

Please submit your solution as a PDF report or a link to a Jupyter Notebook hosted on a platform like GitHub. Include your code, visualizations, and explanations of your NLP techniques and findings.

Evaluation:

You will be evaluated based on your NLP skills, the quality of your analysis, the clarity of your presentation, your ability to extract meaningful insights from text data, and your proficiency in using Python for NLP tasks.