Task 22 - Capstone Project - NLP

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Compulsory Task 1

In a file called nlp_1.pdf, categorise which type of NLP application applies for each of the following use cases:
(Use the categories we have discussed on this Bootcamp so far)

I re-watched the classes about NLP to remember which NLP Applications were mentioned so I can use them to answer the question. The classes were:

- Introduction to Natural Language Processing (Monday - May 15th)
- Semantic Similarity (Wednesday, May 17th)
- Recap on Natural Language Processing (Thursday, May 18th)

And none of them discusses **NLP Applications**! Of course, we talked about SpaCy and similarity, lemmatization, stop words, and noun chunks.
So the first time we heard about them was in the PDF of this Task (DS T22 - Capstone Project - NLP.pdf) and the **limited** options are Language Translation, Text Classification, Automatic Summarization, Sentiment Analysis and Question Answering. So I felt the liberty to look for more of them on the Internet to answer the questions.

a. A model that allocates which mail folder an email should be sent to (work, friends, promotions, important), like Gmail's inbox tabs.

   Answer: The use case described falls under the category of Text Classification. Text classification involves categorizing text into predefined classes or categories based on their content or characteristics. In this case, the model is analyzing the content of an email to determine which folder it should be assigned to (work, friends, promotions, important).

   By applying natural language processing techniques, the model can extract relevant features from the email text and classify them into the appropriate category. It may consider keywords, phrases, or patterns within the email to make the classification decision. This type of text classification is commonly used in email filtering systems, where emails are automatically sorted into different folders or tabs based on their content or importance.

b. A model that helps decide what grade to award to an essay question. This can be used by a university professor who grades a lot of classes or essay competitions.

   Answer: The use case described can be categorized as Automated Essay Scoring or Automated Grading, which is a specific application of Natural Language Processing (NLP).

Automated Essay Scoring (AES) involves using NLP techniques and models to assess and assign grades to essays or written responses. The model analyzes the text of the essay, taking into account various linguistic features, such as vocabulary, grammar, coherence, and argumentation, to determine an appropriate grade or score.

By training the model on a large dataset of pre-graded essays, it can learn patterns and characteristics that correspond to different levels of proficiency or quality. The model can then apply this knowledge to automatically grade new essays based on their similarity to the patterns observed in the training data.

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c. A model that provides assistive technology for doctors to provide their diagnosis. Remember, doctors ask questions, so the model will use the patients' answers to provide probable diagnoses for the doctor to weigh and make decisions.

Answer: The use case described can be categorized as a Clinical Decision Support System (CDSS) or Medical Diagnosis Assistance.

A Clinical Decision Support System is a type of application that assists healthcare professionals, such as doctors, in making clinical decisions by providing relevant information and recommendations based on patient data. The model acts as a diagnostic assistant for doctors.

The model would use natural language processing techniques to understand and interpret the patients' answers to the questions posed by the doctor. It would then analyze the responses, compare them with known medical knowledge and databases, and provide probable diagnoses or recommendations for the doctor to consider.

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