Reference Material: [Open domain suggestion mining: Problem definition and datasets]

1. Define suggestion mining in your own words.
   >> Suggestion mining can be defined as the detection and extraction of text that contains suggestions, recommendations or wishes from unstructured text.

2. Explain a use case where suggestion mining could be useful.
   >> The use cases for suggestion mining are as below:
      1. Customer reviews on products such as but not limited to electronic devices where the reviewer is suggesting wishful changes in the newer version of the product.
      2. Discussion forums over Reddit or Discord server whereby people share their opinion about the new government policy. These forums could be leveraged to understand the consensus amongst the people about the new policies.

3. Give any two challenges involved in the suggestion classification task with a short explanation.
   a. Task formalisation and data annotation
   b. Understanding sentence level semantics
   c. Figurative expressions
   d. Long and complex sentences
   e. Context dependency
   f. Highly imbalanced class distribution in some domains

4. Explain implicit and explicit suggestions in your own words along with an example for each.
   >> In implicit suggestions, the user hints suggestions. Here, context plays an important role while deciding if the given user statement is a mere fact or an implicit suggestion. For example, the user might say, "I would not travel this year", which is a fact. But if they add more context by saying, "If I were you, I would not travel this year." On the other hand, explicit suggestions are direct suggestions that the user could recommend, or request. For example, I recommend watching interstellar to all my friends.

5. Is the following sentence a suggestion: "*I would not travel to the USA during the pandemic?"* Why or why not?
   >> Why Not
   The sentence is not an explicit suggestion because it lacks either of the surface structures for the suggestion (Direct, Conventionalised) as defined by Martinez (2005).

   >> Why
   The sentence is an implicit suggestion because it seems to have enough information to imply the event (travel), some notion of a directive (would not) associated with the event and context (Travel Instruction, Pandemic).

6. Give an example where more context for a sentence could possibly turn a non-suggestion into a suggestion?
   >> The food is good but you have to give specific preparation instructions while ordering a meal.
   The above example can be turned into a suggestion by adding one of the following elements of context:
   a. Domain: If the domain (source of text) is known and for instance is "Restaurant Review" then it would be a suggestion.
   b. Source Text: If the text in question is a part of the larger text that offers instructions for dining then it would be a suggestion.
   c. Application or Use case: If it's known that the text in question was given specifically to improve customer satisfaction, then it would be considered a suggestion too.

7. For one crowdsourcing platform, state the advantages and disadvantages of such a platform.
   >> Figure Eight (https://www.crunchbase.com/organization/crowdflower) formerly crowdflower is used for crowdsourced annotation of the suggestion mining dataset.
   Advantages:
   1. Multiple annotations can be obtained for the same data point.
   2. It is an AWS partner and has achieved AWS Financial Services Competency and AWS Machine Learning Competency.
   3. It allows for active testing of labellers before and during data tasks.
   4. Allows task organisers to have direct and customizable control of their workflows.
   5. GDPR compliant.

   Disadvantages:
   1. The annotators are layman annotators thus the obtained annotations cannot have an expert annotator level of competency.
   2. It is a paid service. Depending on the quantity and quality of the annotations appropriate amount is charged.

8. How is inter-annotator agreement used for the suggestion mining task?
   >> When you create a benchmark dataset for suggestion mining, you have to manually annotate data for it, which can be done with the help of crowdsourcing and/or expert annotators. In both cases, for the annotations to be reliable, you want your annotators to agree with each other on the labels they assign to data to a certain extent. To ensure that, you can calculate the inter-annotator agreement using metrics like Cohen's kappa. Then, you can only include data instances (= sentences in suggestion mining task) that have an IAA above a certain threshold in the benchmark dataset.

9. How will you evaluate a text classification model on a benchmark suggestion classification dataset?
   >> To evaluate our classifier on a benchmark dataset, we can run it on the test data from this dataset and compare the predictions of our model with the labels given in the dataset. You can use different classification metrics, such as accuracy, precision,

recall, F1 score etc., to measure how well a model predicts the labels. In "SemEval-2019 Task 9: Suggestion Mining from Online Reviews and Forums", the authors use F1 score for the positive class, i.e. the suggestion class, as an evaluation metric for testing different suggestion mining systems on a benchmark dataset. It calculates as follows:

$$F1_{sugg} = 2 * (P_{sugg} * R_{sugg}) / (P_{sugg} + R_{sugg})$$ *, where*

P_sugg = TP / (TP + FP)
R_sugg = TP / (TP + FN)

10. Suggest one other text classification task similar to suggestion mining. Does it need an annotated (supervised) dataset?
    >> Sentiment analysis, auto-tagging customer support tickets, offensive content labelling. While the solution to any of these tasks can be at least partly unsupervised (e.g. there was no training dataset provided for the Subtask B in Task 9 "Suggestion Mining from Online Reviews and Forums" in SemEval 2019, so the participants could use training data from a different domain, pretrained large language models, clustering methods etc. to solve it), you still need an annotated dataset for evaluation.