**Koodoo AI Engineer: Case Study**

1. **Introduction:**

Welcome to the Koodoo AI Engineer Case Study!

At Koodoo, we are at the forefront of revolutionising the mortgage industry with cutting-edge AI-driven solutions. As we continue to lead the way in digitising and streamlining mortgage processes, we are seeking an AI Engineer to join our dynamic team.

In this exercise, we invite you to showcase your skills and problem-solving capabilities in the realm of artificial intelligence. The case study presents a unique opportunity to demonstrate your proficiency in developing a prototype software application with a focus on natural language processing, sentiment analysis, and audio processing.

Your task is to build a solution that classifies customer-agent calls, verifies the reading of disclaimers, and generates a concise summary with actionable insights. The challenge is designed to gauge your technical prowess, creativity, and ability to address real-world AI application scenarios.

Please feel free to ask any clarifying questions during this period. Once completed, submit the code files via email to [ana.clua-carulla@koodoo.io](mailto:ana.clua-carulla@koodoo.io). Please take into account the following:

* Submit the code used to solve all the questions.
* Make sure that your code is readable and reproducible.
* Make sure that you name the deliverables and add comments to the code to identify who the files belong to (Expected deliverables: code files, slides).

The results and your chosen approach will be considered during the evaluation process.

We appreciate your commitment and look forward to witnessing your innovative solutions.

Best of luck!

The Hiring Team

1. **Problem Statement:**

Build a prototype software application that takes a WAV or MP3 audio file as an input and assesses the call against the following criteria:

1. Classify calls as positive, neutral or negative in nature:
   1. Develop a mechanism to determine the overall tone of the call.
   2. The call should be classified as positive (indicating a positive interaction), neutral (for routine or non-emotional conversations), or negative (highlighting potential issues or dissatisfaction).
2. Verification of Disclaimer Reading:
   1. Implement a process to verify whether the agent correctly read aloud the necessary disclaimers at the start of the call.
   2. Disclaimer text: “*I need to inform you that this call is recorded. We may contact you in the future to offer further products and services. You always have the option to withdraw from receiving this contact from us.*”
   3. Consider scenarios where the disclaimers may vary across different calls or may have specific wording requirements.
3. Call Summary Generation:
   1. Create a concise and informative summary of each call, capturing key points and action items.
   2. The summary should be presented in a format that is easily understandable and highlights important aspects of the conversation.
4. Technical Approach:
   1. Utilise appropriate tools and libraries for audio file processing and meeting the other objectives of the case study, however it is expected that you utilise Large Language Models where appropriate
   2. Ensure that the solution accommodates the nuances of different call scenarios and effectively addresses the specified criteria.
5. **Bonus objectives:**

Explore ways to automatically evaluate the quality of the summary output (i.e. reduce hallucinations or inaccuracies in a systematic manner)

Please be prepared in your case study interview to talk about how you might as a next step take this prototype into a production environment, particularly paying attention to data security, scalability and reliability.

1. **Materials Provided:**

Provided with this case study are three sample calls between an agent working for a fictitious company called the “Ghost Office” which provides postal services. Each of the calls starts with the agent picking up the phone and introducing themselves, followed by a dialogue between the agent and the customer.

1. **Case Study Guidance**:

* To submit this assignment, please upload your code to a personal GitHub and private repository and share the repository with Koodoo’s hiring team ( add emails of hiring team so that GitHub can be shared directly): send an email with the link to the GitHub page.
* During the next interview round, you should be prepared to present a working prototype to the interview panel, and answer any questions.
* Successful completion of the exercise is not a requirement for the role, but the results and chosen approach will be taken into consideration when evaluating candidates.

1. **Presentation Requirements**:

After completing the case study, you are required to prepare and deliver a 30-minute presentation showcasing your work on the case study. Below are the requirements for the presentation:

* Ensure that your presentation is clear and comprehensible to the audience, avoiding overly technical jargon where possible.
* Use visual aids such as slides to illustrate key points and concepts effectively.
* Have the prototype software application ready for demonstration during the presentation.
* Make sure the code and necessary tools are readily available to showcase the functionality of your solution.
* Describe the reasoning behind your chosen tools, libraries, and methodologies, highlighting their relevance to the problem statement.
* Provide insights into the implementation details of your solution, including the architecture, algorithms, and data processing techniques employed.
* Showcase snippets of code or diagrams to illustrate key aspects of your implementation.
* Discuss how your solution was evaluated against the specified criteria and present the results.
* Highlight any notable findings, successes, or challenges encountered during the evaluation process.

1. **Conclusion**:

In conclusion, I want to express my heartfelt appreciation to all participants for investing their time and expertise in completing the case study. Your innovative solutions and thoughtful approaches have demonstrated your capability and dedication as AI Engineers. As you move forward in the selection process, I wish each of you the best of luck in your endeavours. Remember, our team is here to support you, so please feel free to reach out if you require any further assistance or clarification.