



## APPLICATION FOR CHARTERED AI ENGINEER LEVEL 1 TECHNICAL REPORT SUBMISSION

### Instructions

1. This document will guide you through the project details needed for your technical report submission.
2. Each section includes guiding instructions in *italics*. **Please delete the guides and replace them with your inputs when you submit your application.**
3. Do not leave any sections empty. You are encouraged to include supporting information in the form of graphics, diagrams, charts or tables.

### Definition of an AI Project

An AI project comprises

- an AI model designed to address a business problem,
- the data preparation and model deployment pipelines set up to integrate the model into a production system, and
- the infrastructure and/or platform set up to support the above.

### Eligible AI Projects

1. A company project with commercial targets and deliverables.
2. A client-commissioned project with commercial deliverables and payment.

The following types of AI projects are **NOT** eligible for the technical submission:

1. A class project from an academic course, even if it is a company-sponsored project.
2. A project from a hackathon or any other public competition.



## I. PROJECT SYNOPSIS

*Guide (please delete when submitting your report)*

- a. *Describe your AI project - the problem to be solved and the deliverables required by the project sponsor.*
- b. *Describe how your solution addressed the problem and how the AI model was linked to the deliverables.*
- c. *Identify the end users of the solution and how the solution benefitted them in both quantitative and qualitative terms, such as productivity gained or increase in revenue.*
- d. *Describe how you will evaluate the model performance during development and state the metrics used.*
- e. *Describe how you monitor the model performance (if it's deployed), or how you plan to track and monitor the model performance.*

## II. DATA PREPARATION

*Guide (please delete when submitting your report)*

- a. *Describe what you did for data preprocessing and the steps taken.*
  - i. *Were there any missing values? How did you handle missing data?*
  - ii. *Were there any outliers? How did you handle outliers?*
- b. *Describe what was done for feature engineering.*
  - i. *How did you decide what features to create?*
  - ii. *How did you measure feature importance?*
- c. *Explain your train-test-split strategy.*
  - i. *How large was the train/test/validate dataset?*
  - ii. *Was there any data imbalance?*
  - iii. *How did you ensure that there was no data leakage?*
- d. *Describe other data challenges that you encountered.*



#### IV. EXPLORATORY DATA ANALYSIS (EDA)

*Guide (please delete when submitting your report)*

- a. *Describe the steps taken and the insights derived.*
  - i. *What tools and techniques did you use for EDA?*
  - ii. *Why did you select those tools and techniques?*
  
- b. *Describe how you applied the learnings from EDA in your AI project.*
  - i. *What did you learn from the EDA?*
  - ii. *How did the insights inform the rest of the modelling process?*

#### V. MODEL DESIGN AND DEVELOPMENT

*Guide (please delete when submitting your report)*

- a. *Describe the algorithm(s) used and explain your choice(s). Include details of your research and the testing done to arrive at your choice(s).*
  - i. *How did you approach the problem?*
  - ii. *Do you have a baseline model?*
  - iii. *What kind of models were suitable for the problem?*
  - iv. *What tools and techniques did you use?*
  - v. *How was model selection/ensemble conducted?*
  
- b. *Describe the steps taken for model parameter tuning if applicable.*
  - i. *What were the model parameters included for tuning?*
  - ii. *How were the experiments carried out?*
  - iii. *How did you compare different permutations of parameters?*
  - iv. *How did you arrive at your conclusion?*
  
- c. *Describe the metric(s) used to evaluate model performance and explain your choice(s).*
  - i. *Why were the metric(s) suitable for the evaluation?*
  - ii. *Were there any trade-offs between sensitivity and specificity?*



## VII. SOLUTION DEPLOYMENT

*Guide (please delete when submitting your report)*

- a. *Describe the high-level solution architecture of your AI project.
  - i. *Describe the front end of the project and how it is used by the end users.*
  - ii. *Elaborate on your considerations for the business and/or operating environment*
  - iii. *Explain how the project data was organised and versioned**
- b. *Explain the AI workflow environment and the pipeline design.*
- c. *Describe the machine learning (ML) operations for managing the production ML lifecycle.*
- d. *Describe the infrastructure and platform setup to support the project.*
- e. *Describe the scalability considerations for the project.*
- f. *Describe how system performance was tracked and monitored.*

## VIII. AI GOVERNANCE

*Guide (please delete when submitting your report)*

- a. *Describe the steps taken to mitigate data bias and model fairness. Include the tools used and any other factors taken into consideration during model development.*

## IX. ADDITIONAL INFORMATION

*Guide (please delete when submitting your report)*

- a. *Include any additional information you wish to add to support your submission.*

## X. CONSENT

- I agree that the above information will be used for administering the professional qualification process for Chartered AI Engineer Level 1, and will be disclosed to the appointed assessors for my application.