



## APPLICATION FOR CHARTERED AI ENGINEER LEVEL 2 TECHNICAL REPORT SUBMISSION

### Instructions

1. This document will guide you through the project details needed for your technical report submission.
2. You are required to **submit two (2) project reports** for the assessment. Please use a **separate set of documents for each project**. Refer to the application instructions available on the website or emailed to you.
3. Each section includes guiding instructions in *italics*. **Please delete the guides and replace them with your inputs when you submit your application.**
4. Do not leave any section 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 solution designed to address a business problem or deliver a business outcome,
- the data preparation and model deployment pipelines set up to integrate the solution 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 in one paragraph - the problem to be solved and the deliverables required by the project sponsor.*
- b. Explain the background of the AI project, including but not limited to context, business environment or requirements, how success is measured etc.*
- c. Describe how your AI solution addressed the problem and how the model was linked to the deliverables. Include any assumptions made.*
- d. 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.*
- e. Explain how the solution has impacted the business environment of the project sponsor, include business improvements and business risks (if any) that can be attributed to the solution. Provide objective evidence of success wherever possible.*



## II. BUSINESS COLLABORATION MANAGEMENT

*Guide (please delete when submitting your report)*

- a. *Elaborate on how you communicated the solution's benefits and limitations to both technical and non-technical stakeholders.*
- b. *Explain how you obtained buy-in and support from the project sponsor and/or other stakeholders for the adoption of the solution.*
- c. *Describe the consultations you had with the project sponsor and/or stakeholders in designing the solution, and how these influenced its development.*

## III. MODEL PERFORMANCE (PERFORMANCE MONITORING)

*Guide (please delete when submitting your report)*

- a. *Describe how the AI solution has been performing in production. Explain how you track and attribute business improvements to the solution.*
- b. *Describe measures taken to monitor and evaluate model performance, as well as plans for issue tracking and continuous improvement.*



## V. SOLUTION DESIGN AND DEVELOPMENT

*Guide (please delete when submitting your report)*

- a. *Describe how you translated the business requirements into the AI solution design. Explain your approach and the consideration given to business and practical realities.*
- b. *Describe the development of the AI solution, including but not limited to:*
  - *the data challenges faced, such as data quality and data collection issues,*
  - *data validation, exploration, feature engineering and any other steps taken that had an impact on the quality of the AI solution,*
  - *the modelling strategies applied and the choice of algorithm(s), and*
  - *any other information.*
- c. *Describe how the AI solution was designed with user-centred considerations such as ease of use, human-in-the-loop processes, and change management.*

## VI. MODEL/PIPELINE DEPLOYMENT WORKFLOW

*Guide (please delete when submitting your report)*

- a. *Describe the integration of the model into the production system, including but not limited to:*
  - *the technologies used,*
  - *trade-offs in areas such as accuracy, performance, robustness and scalability, and why they were necessary,*
  - *controls to track and manage input data quality,*
  - *the management and security plan for the project data, and*
  - *any other considerations when deciding on the design.*
- b. *Describe the data preparation and model deployment pipelines built to support the deployment, including but not limited to:*
  - *data pipeline engineering and data model design,*
  - *model integration,*
  - *test planning, and*
  - *any other tools or applications used to ensure quality and efficiency.*

## VIII. MACHINE LEARNING (ML) OPERATIONS

*Guide (please delete when submitting your report)*

- a. *Describe the setup of the IT environment (cloud or on-premises).*
  - i. *Describe the infrastructure setup and the AI accelerators, frameworks and any other components used.*
  - ii. *Explain the use of infrastructure-as-code and automation to support the ML development and deployment workflows, if applicable.*
  - iii. *Include any other information you wish to add, e.g. information on change management for the technology stack.*
  
- b. *Describe how the performance of the solution is tracked.*
  - I. *Describe the tracking of model experiments including time taken for training/re-training, model parameters testing and steps towards reproducibility for the purposes of data and model provenance,*
  - II. *Describe the tracking of model performance including time taken for inferencing, the feedback mechanisms and considerations for mitigating model decay/data drift.*
  - III. *Describe how outputs and anomalies are monitored to detect outliers, critical incidents, technical glitches or disruptive changes in business behaviour.*
  - IV. *Include any other information you wish to add.*
  
- c. *Describe how scalability is addressed.*
  - I. *Explain the scalability issues related to the ML system and how they were resolved.*
  - II. *Explain the considerations and trade-offs for data processing, model training and model inferencing with regards to scalability.*
  
- d. *Describe the budgeting for the project*
  - I. *Indicate the percentage of project budget that goes into the ML infrastructure.*
  - II. *Explain the budget for operating the ML system, such as the cost of data collection and data processing.*

## IX. AI TECHNICAL COMPETENCY

*Guide (please delete when submitting your report)*

- a. *Explain the AI technical competencies you applied in the following areas (where applicable):*
  - *Data/feature pipeline engineering and data model design*
  - *Computational modelling (e.g. computer vision, text analytics, graph modelling) and computational thinking skills*
  - *Model performance and efficiency optimisation*
  - *Design of self-learning system with feedback mechanism*
  - *Model integration with synthesis of technologies*
  - *Test planning, authoring and implementation*



## X. 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.*
- b. *Describe the strategy/measures you introduced to ensure the secure and safe use of the AI solution.*
- c. *If an AI governance framework (e.g. the AI Governance Framework released by Singapore's Personal Data Protection Commission) was applied, explain how it was used and suggest improvements, if any.*

## XI. LEADERSHIP

*Guide (please delete when submitting your report)*

- a. *Provide the plan for coordinating and managing the development team and evidence of successful execution.*
- b. *Provide examples of conflict resolution.*
- c. *Provide the plan for managing and planning resources and budgets for the team, and evidence of successful execution.*

## XII. ADDITIONAL INFORMATION

*Guide (please delete when submitting your report)*

- a. *Include any additional information you wish to add to support your submission.*
- b. *Share your thoughts on possible improvements that can be made to the AI solution.*

## XIII. CONSENT

- I agree that the above information will be used for administering the professional qualification process for Chartered AI Engineer Level 2, and will be disclosed to the appointed assessors for my application.