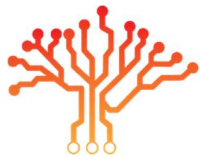


# AI CERTIFICATION HANDBOOK

by



**AI SINGAPORE**

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# INTRODUCTION

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The AI Certification programme for AI engineers was announced on 29 October 2019.

Developed by AI Singapore, it aims to provide professional recognition to qualified AI engineers.

There are currently four (4) levels of professional qualifications in AI Certification:

1. AI Certified Engineer Associate (AICE Assoc)
2. AI Certified Engineer Level I (AICE I)
3. AI Certified Engineer Level II (AICE II)
4. AI Certified Engineer Level III (AICE III)

This handbook provides information how aspiring applicants can attain each level of professional qualifications, including required competencies and experiences, the assessment framework, application process and re-certification and renewal.

The assessment framework of AI Certification are mapped to real-world industry needs through AISG's 100E Programme (*100 Experiments*) and its award-winning<sup>1</sup> AI Apprenticeship Programme (AIAP)<sup>TM</sup>.

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<sup>1</sup> IDC Digital Transformation Awards "Talent Accelerator" 2019 Winner for Singapore

## ABOUT AI SINGAPORE

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AI Singapore (AISG) was established in June 2017 as a national research and innovation programme office focused on harnessing the scientific and economic potential of AI to boost Singapore's global competitiveness. It does this by directing AI research and innovation of strategic interest, developing national-level AI systems and building AI engineering talents and capabilities to catalyse industry transformation.

AISG is funded by the National Research Foundation and located within the campus of the National University of Singapore.

For more information on AISG and its programmes, please visit <https://www.aisingapore.org>.

## **WHAT IS AN AI CERTIFIED ENGINEER?**

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An AI Certified Engineer (AICE) is an individual who has been assessed to have the technical competencies to build AI applications.

Associate and Level I AICEs are able to use their capabilities to build AI models/solutions or applications to address business problems. Those certified at Levels II and above have also demonstrated their ability to lead a team of AI engineers to design, develop and deploy multiple AI projects which unlock and deliver business value.

As the demand for skilled AI engineers grows, AICEs are well positioned to provide the necessary technical and professional knowledge, skills and competencies to manage AI projects successfully from start to end.

## AI Career Profiles

The four certification levels for AI engineers are aligned with the competency requirements of different AI career profiles.

Certification	Profile	Required Competencies
<b>AI Certified Engineer Associate</b>	Students who are deeply interested in coding/AI/machine learning (ML), fresh graduates, working professionals who employ data analysis techniques in the course of their work	<ul style="list-style-type: none"> <li>• Python/programming</li> <li>• SQL</li> <li>• Linear algebra and statistics</li> <li>• Exploratory data analysis</li> <li>• AI/ML</li> <li>• AI ethics, bias and governance</li> </ul>
<b>AI Certified Engineer Level I</b>	<p>Working professionals with at least one year of experience in AI-related roles.</p> <p>Individuals at this level are typically AI specialists in AI project teams within a commercial organisation.</p>	<ul style="list-style-type: none"> <li>• Business needs analysis</li> <li>• Data preparation/feature engineering</li> <li>• Model design and deployment</li> <li>• Statistics and theoretical knowledge</li> <li>• Communication</li> <li>• AI ethics, bias and governance</li> </ul>
<b>AI Certified Engineer Level II</b>	<p>Working professionals with at least three years of experience in AI-related roles.</p> <p>Individuals at this level are typically managers or senior managers who are team leads for large-scale AI projects in commercial organisations.</p>	<ul style="list-style-type: none"> <li>• AI implementation consulting</li> <li>• Model design and process management</li> <li>• Stakeholder management and communication</li> <li>• AI ethics, bias and governance</li> </ul>
<b>AI Certified Engineer Level III</b>	<p>Senior role with at least six years of experience in AI-related roles, leading teams in developing and deploying multiple large-scale and complex AI projects in a commercial organisation.</p> <p>Individuals at this level typically head AI/Technology Centres of Excellence or similar functional units in a large commercial organisation.</p>	<ul style="list-style-type: none"> <li>• Strategic thinking</li> <li>• Communication</li> <li>• AI project design, development, management and deployment</li> <li>• IP management</li> <li>• Thought leadership</li> <li>• AI ethics, bias and governance</li> </ul>

# CERTIFICATION LEVELS

## 1. AI Certified Engineer Associate

An AI Certified Engineer Associate (AICE Assoc) is an individual who understands the major AI frameworks and cloud infrastructure and is able to apply this knowledge to build an AI solution that solves a business problem.

### 1.1 Required Technical Knowledge and Skills

This certification level is for candidates who do not possess working experience in AI-related roles but have a programming background in Python, understand databases and are able to run basic SQL queries. The candidate should also have some knowledge of software engineering, AI cloud services, data engineering and data management.

### 1.3 Assessment

There are two parts to the AICE Assoc assessment:

#### a) **Technical Test**

The technical test is a five-day home-based assessment that is emailed to the candidate's registered email address. Candidates have to adhere to all the instructions stated in the technical test document.

The test starts at 0900 hours on the first day and has to be submitted before 1900 hours on the fifth day. Late entries will not be entertained.

Candidates will be given a dataset and are required to submit a solution coded in Python, consisting of three sections:

1. Data extraction
2. Exploratory data analysis
3. End-to-end machine learning pipeline

Instructions on packaging and submitting the deliverables are provided in the test document.

AISG will evaluate each candidate's submission based on a set of assessment rubrics. Candidates who pass the technical test will receive an email notification to attend an assessment interview in person.

A reminder will be sent three working days after the first email, requesting the candidate to confirm the interview. If no reply is received within two working days after the second email, the candidate will be deemed to have withdrawn his/her application.

## **b) Assessment Interview**

During the assessment interview, candidates will present their submitted codes to a panel comprising two engineers from AISG. They should be prepared to explain the concepts that they utilised in the technical test and will also be asked questions to ascertain their technical knowledge.

The assessment interview will take about 30 minutes. Candidates are required to bring their own laptops/computing devices for the interview.

## **1.4 Application Process**

The AICE application form is available on AISG's website at <https://www.aisingapore.org/ai-certification/>. Applications are processed on a quarterly basis.

Information on the opening and closing dates for applications will be announced through the AISG mailing list, website and social media channels.

A non-refundable application fee will be collected upon submission of application. Candidates will receive an email confirmation if their registration is successful.

## **1.5 Application Fee**

There is a **non-refundable** application fee of SG\$267.50 (including GST).

## **1.6 Certification Validity**

Candidates who fulfil the requirements for AICE Assoc will receive an electronic certificate issued by AISG. For a hardcopy of the certificate, there will be an additional charge of S\$21.40 (for delivery via registered local mail) or S\$74.90 (via courier).

Certified engineers will be allowed to display their certification credentials and the AISG AI certification logo on their business card, email signature and other corporate marketing materials.

Upon expiry, re-certification is required for continued display of the accreditation. Please refer to the sections on **Display of Credentials** and **Certification Renewal** for more details.

## **1.7 Additional Information**

All Singapore citizens who attain the AICE Assoc certification will be invited to apply for the nine-month AI Apprenticeship Programme (AIAP)<sup>™</sup>.



This is a full-time programme that gives successful applicants the opportunity to work on real-world AI projects alongside experienced mentors. Apprentices can expect to receive a monthly stipend of between SG\$3,500 and SG\$5,500.

For more information on the AIAP™, please visit <https://www.aisingapore.org/aiap>.

## **2. AI CERTIFIED ENGINEER LEVEL I**

An AI Certified Engineer Level I (AICE I) is an individual who has demonstrated the ability to deploy AI solutions for a commercial organisation.

### **2.1 Required Technical Competencies and Experience**

Candidates will need to have at least one year of working experience in an AI-related role, and must have deployed one AI solution with a project value of at least SG\$250,000 and/or built an AI product that is being used by a commercial organisation.

### **2.3 Assessment**

There are two parts to the assessment process:

#### **a) Technical Report**

Candidates have to submit a technical report describing an AI solution or AI product that they have deployed for a commercial project or an R&D/research initiative.

If the submission meets AISG's evaluation criteria, the candidate will receive an email invitation to attend an assessment interview in person.

A reminder will be sent three working days after the first email, requesting the candidate to confirm the interview. If no reply is received within two working days after the second email, the candidate will be deemed to have withdrawn his/her application.

#### **b) Assessment Interview**

During the assessment interview, candidates will be asked to present and walk through the AI solution (or product) described in their technical report. The assessment panel will comprise the Head of AI; AI engineer; and AICE I-accredited professionals from the industry.

Candidates will need to display a sound understanding of core AI concepts. The panel will also be assessing the candidate's critical thinking and problem-solving abilities. Knowledge of Singapore's Model AI Governance Framework (or any other applicable ethics framework) will be an advantage.

Candidates are required to bring their own laptops/computing devices for the assessment interview.

## **2.4 Application Process**

The AICE application form is available on AISG's website at <https://www.aisingapore.org/ai-certification/>. Applications are processed on a quarterly basis.

Information on the opening and closing dates for applications will be announced through the AISG mailing list, website and social media channels.

Candidates will need to prepare and submit:

- a) The technical report
- b) Details for accessing the deployed AI solution on a commercial cloud or on-premises platform (where permitted and/or applicable)
- c) Updated curriculum vitae

A **non-refundable** application fee will be collected upon submission of application. Candidates will receive an email confirmation if their registration is successful.

## **2.5 Application Fee**

There is a **non-refundable** application fee of SG\$535 (including GST).

## **2.6 Certification Validity**

Candidates who fulfil the requirements for AICE I will receive an electronic certificate issued by AISG. For a hardcopy of the certificate, there will be an additional charge of S\$21.40 (for delivery via registered local mail) or S\$74.90 (via courier).

Certified engineers will be allowed to display their certification credentials and the AISG AI certification logo on their business card, email signature and other corporate marketing materials.

Upon expiry, re-certification is required for continued display of the accreditation. Please refer to the sections on **Display of Credentials** and **Certification Renewal** for more details.

## **2.7 Additional Information**

To help Singapore build a sustainable pool of AI talent, accredited engineers will be invited to be AI Certification Assessors for future batches of AICE I applicants. The term of service will be 24 months and assessors will be paid an honorarium.

### **3. AI CERTIFIED ENGINEER LEVEL II**

An AI Certified Engineer Level II (AICE II) is an individual who has demonstrated the ability to deploy production AI at scale.

#### **3.1 Required Technical Competencies and Experience**

Candidates will need to have at least three years of working experience in AI-related roles and led a team in deploying a commercial AI solution or application with a project value of at least SG\$500,000.

#### **3.3 Assessment**

There are two parts to the assessment process:

##### **a) Technical Report**

Candidates have to submit a technical report describing an AI solution that they have deployed within the previous three years. This could be for a commercial organisation or for an R&D/research initiative.

If the submission meets AISG's evaluation criteria, the candidate will receive an email invitation to attend an assessment interview in person.

A reminder will be sent three working days after the first email, requesting the candidate to confirm the interview. If no reply is received within two working days after the second email, the candidate will be deemed to have withdrawn his/her application.

##### **a) Assessment Interview**

During the assessment interview, candidates will be asked to present and walk through the AI solution (or product) described in their technical report. The assessment panel will comprise the Head of AI, AISG; Industry Mentors; and AICE II-accredited professionals from the industry.

Candidates will need to display a sound understanding of core AI concepts, in particular those used in their AI model (or product). The panel will also be assessing the candidate's critical thinking and problem-solving abilities. Knowledge of Singapore's Model AI Governance Framework (or other applicable ethics framework) will be an advantage.

Candidates are required to bring their own laptops/computing devices for the assessment interview.

### **3.4 Application Process**

The AICE application form is available on AISG's website at <https://www.aisingapore.org/ai-certification/>. Applications are processed on a quarterly basis.

Information on the opening and closing dates for applications will be announced through the AISG mailing list, website and social media channels.

Candidates will need to prepare and submit:

- a) The technical report
- b) Details for accessing the deployed AI model on a commercial cloud or on-premises platform (where permitted and/or applicable)
- c) Updated curriculum vitae

A **non-refundable** application fee will be collected upon submission of application. Candidates will receive an email confirmation if their registration is successful.

### **3.5 Application Fee**

There is a **non-refundable** application fee of SG\$856 (including GST).

### **3.6 Certification Validity**

Candidates who fulfil the requirements for AICE II will receive an electronic certificate issued by AISG. For a hardcopy of the certificate, there will be an additional charge of S\$21.40 (for delivery via registered local mail) or S\$74.90 (via courier).

Certified engineers will be allowed to display their certification credentials and the AISG AI certification logo on their business card, email signature and other corporate marketing materials.

Upon expiry, re-certification is required for continued display of the accreditation. Please refer to the sections on **Display of Credentials** and **Certification Renewal** for more details.

### **3.7 Additional Information**

To help Singapore build a sustainable pool of AI talent, accredited engineers will be invited to be AI Certification Assessors for future batches of AICE I and AICE II applicants. The term of service will be 24 months and assessors will be paid an honorarium.

## **4. AI CERTIFIED ENGINEER LEVEL III**

An AI Certified Engineer Level III (AICE III) is an individual who can architect and manage multiple complex AI solutions, and is widely regarded by the AI community as an authority or opinion leader.

### **4.1 Required Competencies and Experience**

Candidates will typically need to have more than six years of working experience in AI-related roles and hold a senior role in a commercial organisation, often with a regional or global remit. They should also have a successful track record in leading project teams to deploy multiple and complex AI projects.

### **4.2 Application Process**

AICE III is a prestigious certification awarded to individuals of stature in the field of AI. It is not open for application. Candidates have to be nominated by recognised leaders in AI as well as AISG's partner organisations.

Nominated individuals will be invited for a confirmation interview with the Recommendation Panel which consists of the Director of AISG or equivalent; and Industry Mentors or AICE III-accredited professionals from the industry.

### **4.3 Certification Validity**

The AICE III certification will be valid as long as the recipient continues to support and actively contribute to the AI certification process and the growth of the AI ecosystem in Singapore.

Certified engineers will be allowed to display their certification credentials and the AISG AI certification logo on their business card, email signature and other corporate marketing materials.

### **4.4 Additional Information**

To help Singapore build a sustainable and growing pool of AI talent, AICE III-certified AI leaders will be invited to serve as ambassadors for AI Singapore and/or certification assessors for future batches of AICE II. They may also be invited to be part of the recommendation panel for the AICE III award. The term of service will be 36 months and they will be paid an honorarium.

## Overview of the AI Certification Programme

	AI Certified Engineer Associate	AI Certified Engineer Level I	AI Certified Engineer Level II	AI Certified Engineer Level III (By Invitation Only)
<b>Qualification and recommended experience</b>	Completed the self-learning pathway “Becoming an AI Apprentice – A Field Guide” or equivalent	At least one year of working experience in AI-related roles  Deployed an AI application with a project value of at least SG\$250,000 and/or built an AI product	At least three years of working experience in AI-related roles  Deployed an AI project with a value of at least SG\$500,000	At least six years of working experience in AI-related roles  Widely regarded by the AI community as an authority or opinion leader
<b>Assessment</b>	Pass technical test administered by AISG and attend assessment interview	Submit a technical report on an AI model deployed for a commercial organisation or an R&D/research initiative and present to the assessment panel	Submit a technical report on an AI model deployed for a commercial organisation or an R&D/research initiative and present to the assessment panel	Nominated by AISG and/or industry peers
<b>Competency</b>	Able to understand major AI frameworks and cloud infrastructure, and build an AI model to solve a use case	Able to replicate AI research and deploy AI applications for commercial organisations	Able to deploy production AI at scale	Able to architect and manage multiple complex AI applications
<b>Management skills</b>	NA	AI specialists in AI project teams in a commercial organisation	Managers or senior managers who are team leads for large-scale AI projects in commercial organisations	Holds a senior appointment and typically heads the AI/Technology Centre of Excellence or similar functional unit in a large commercial organisation.
<b>Assessment fee (including GST)</b>	S\$267.50	S\$535	S\$856	NA
<b>Certification validity</b>	Two years	Three years	Three years	Ongoing (T&C applies)

# AI ETHICS

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It is important that AI applications be built and used ethically, fairly and responsibly. An AI engineer should always be aware of the principles that underpin this, reflect on the wider impact of his/her work, and consistently support the public good in his/her projects.

The Personal Data Protection Commission (PDPC) of Singapore has published a Model AI Governance Framework (<https://www.pdpc.gov.sg/Resources/Model-AI-Gov>) which provides detailed and readily-implementable guidance for private sector organisations to address key ethical and governance issues when deploying AI solutions.

The model framework seeks to promote public understanding and trust in AI technologies by explaining how AI systems work, highlighting good data accountability practices and emphasising the need for open and transparent communication,

PDPC has also released the Implementation and Self-Assessment Guide for Organisations (ISAGO) (<https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGIsago.pdf>) which is intended as a companion guide to the model framework, ISAGO helps organisations to align their AI governance practices with the model framework. It also provides industry use cases and best practices to support organisations in the implementation of the framework.

When developing and deploying AI solutions, certified AI engineers should strive to adhere to the guidelines provided in the Singapore Model AI Governance Framework (or any equivalent AI ethics and governance framework such as Australia's Ethics Guidelines for Trustworthy AI, Artificial Intelligence and Japan's Social Principles of Human-Centric AI.)

All AICE candidates will need to complete an online e-learning module on AI Ethics, Bias and Governance before the certification can be awarded.

## **APPEALS**

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Should a candidate wish to appeal against a certification decision, the reasons for the appeal should be submitted in writing to [ai-cert@aisingapore.org](mailto:ai-cert@aisingapore.org).

If a review of the candidate's assessment is required, an administrative fee will be levied. The fee is S\$267.50 for AICE I, and S\$428 for AICE II (both inclusive of GST).

Within 14 days of submitting the administration fee, the appellant will be notified of a review meeting date with the Appeals Review Committee (ARC). The ARC will consist of two senior engineers from AISG and external AICE II and AICE III-accredited engineers who were not involved in the appellant's original assessment.

The ARC will review the merits of the appeal together with the appellant. The results of the appeal will be sent to the appellant within 14 days of the date of the review meeting. All decisions made by the ARC will be final.



## **DISPLAY OF CREDENTIALS**

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All certified engineers will be allowed to display their certification credentials and the AISG AI certification logo on their business card, email signature and other corporate marketing materials. Any display of the AISG certification logo must adhere to the style guide which will be sent to all successful certification candidates.

## CERTIFICATION RENEWAL

AI Certified Engineers, with the exception of AICE III, are required to undergo recertification to ensure that their knowledge, skills and experience remain current. The requirements for recertification are detailed below:

Certification Level	Recertification Period	Required Actions/Documents
<b>AI Certified Engineer Associate</b>	2 years	<ul style="list-style-type: none"> <li>• Successful completion of the technical test and assessment interview</li> <li>• Completion of the online e-learning module on AI Ethics, Bias and Governance</li> <li>• Recertification fee: S\$133.75 (including GST)</li> </ul>
<b>AI Certified Engineer Level I</b>	3 years	<ul style="list-style-type: none"> <li>• A technical report describing an AI solution or product that was deployed for a commercial project or an R&amp;D/Research initiative after the previous certification/recertification date</li> <li>• A complete record of self-directed learning in relevant AI fields (at least 60 hours), together with accompanying verifiable documentation where applicable. Recommendations for relevant learning materials are available under the ShareAI section of the AI Makerspace portal</li> <li>• Completion of the online e-learning module on AI Ethics, Bias and Governance</li> <li>• Updated CV</li> <li>• Recertification fee: S\$214 (including GST)</li> </ul>
<b>AI Certified Engineer Level II</b>	3 years	<ul style="list-style-type: none"> <li>• A technical report describing an AI solution or product that was deployed for a commercial project or an R&amp;D/Research initiative after the previous certification/recertification date</li> <li>• A complete record of self-directed learning in relevant AI fields (at least 60 hours), together with accompanying verifiable documentation where applicable. Recommendations for relevant learning materials are available under the ShareAI section of the AI Makerspace portal</li> <li>• Completion of the online e-learning module on AI Ethics, Bias and Governance</li> <li>• Updated CV</li> <li>• Recertification fee: S\$428 (including GST)</li> </ul>
<b>AI Certified Engineer Level III</b>	NA	<ul style="list-style-type: none"> <li>• The AICE III certification is valid as long as the recipient continues to contribute to, the AI certification process and the building of a strong local AI community.</li> </ul>

## ANNEX A:

### AI Certification Programme – Competencies Required

#### AI Certified Engineer Associate

Competency	Descriptors
<b>Python/Programming</b>	<ul style="list-style-type: none"><li>• Uses Python to develop basic end-to-end data driven AI/ML solutions</li><li>• Uses Python libraries to perform exploratory data analysis and build basic AI/ML models</li><li>• Writes basic SQL queries as part of a simple extract, transform and load pipeline</li><li>• Demonstrates an awareness of good software engineering practices (writing clean and readable code, etc.) and source code management tools</li><li>• Communicates and collaborates effectively with other programmers</li></ul>
<b>Linear Algebra and Statistics</b>	<ul style="list-style-type: none"><li>• Performs basic linear algebra operations and generates descriptive statistics</li><li>• Extracts and analyses relationships between multiple variables using statistical measures and graphical plots</li></ul>
<b>Exploratory Data Analysis (EDA)</b>	<ul style="list-style-type: none"><li>• Discovers insights from data and synthesises them into a coherent story</li><li>• Leverages EDA to engineer features and improve the AI model</li><li>• Effectively communicates analytical findings to stakeholders</li></ul>

<b>Artificial Intelligence (AI)/Machine Learning (ML)</b>	<ul style="list-style-type: none"> <li>• Formulates AI/ML solutions that address the AI/ML task</li> <li>• Demonstrates awareness of standard AI/ML workflow</li> <li>• Articulates the benefits of the AI/ML solution and presents them to stakeholders</li> </ul>
<b>AI Ethics, Bias and Governance</b>	<ul style="list-style-type: none"> <li>• Ensures models that are developed follow the guidelines provided by the Model AI Governance Framework (PDPC) and/or other applicable ethics frameworks, where relevant</li> </ul>

## AI Certified Engineer Level I

<b>Competency</b>	<b>Descriptors</b>
<b>Business Needs Analysis</b>	<ul style="list-style-type: none"> <li>• Evaluates business needs and recommends AI techniques as viable solutions</li> </ul>
<b>Data Preparation/Feature Engineering</b>	<ul style="list-style-type: none"> <li>• Conducts EDA to uncover the underlying structure of data, extract important variables and detect potential data cleanliness and integrity issues</li> <li>• Optimises the data pre-processing pipeline and sets up/improves back-end systems to streamline infrastructure</li> <li>• Engineers useful modelling features and implements appropriate data versioning mechanisms</li> </ul>
<b>Model Design and Deployment</b>	<ul style="list-style-type: none"> <li>• Designs, builds, tunes and debugs AI models for business use cases</li> <li>• Designs and builds automated deployments for AI models with retraining loop, ensuring versioning and reproducibility of built models</li> <li>• Continually fine-tunes models and has functions built in to automatically retrain the models on new data</li> </ul>

	<ul style="list-style-type: none"> <li>• Deploys AI models on infrastructure (including cloud) with robust front-end and an optimised back-end architecture</li> <li>• Understands AI research papers and applies them to new or similar business use cases</li> </ul>
<b>Statistics and Theoretical Knowledge</b>	<ul style="list-style-type: none"> <li>• Scopes and explains the statistical framework underpinning the model(s) being developed</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Expresses technical concepts underpinning findings/results to lay audience/non-technical stakeholders in a clear and concise manner to secure buy-in</li> </ul>
<b>AI Ethics, Bias and Governance</b>	<ul style="list-style-type: none"> <li>• Ensures models that are developed follow the guidelines provided by the Model AI Governance Framework (PDPC) and/or other applicable ethics frameworks, where relevant</li> </ul>

## AI Certified Engineer Level II

<b>Competency</b>	<b>Descriptors</b>
<b>AI Implementation Consulting</b>	<ul style="list-style-type: none"> <li>• Understands business needs and processes, scopes out viable use cases and designs suitable AI solutions that balance the need for accuracy, cost, and timeliness</li> <li>• Performs commercial due diligence to determine the best use of resources</li> </ul>
<b>Solution Design and Process Management</b>	<ul style="list-style-type: none"> <li>• Develops an integrated end-to-end AI solution that emphasises human-centric design</li> </ul>

<b>Management and Communication</b>	<ul style="list-style-type: none"> <li>• Guides and manages a team in the design, development and deployment of large scale AI models</li> <li>• Communicates and collaborates effectively within cross functional teams</li> <li>• Showcases system design to highlight business value to senior stakeholders/customers</li> </ul>
<b>AI Ethics, Bias and Governance</b>	<ul style="list-style-type: none"> <li>• Creates design principles that ensure the responsible and ethical use of AI in deployed platforms</li> </ul>

## AI Certified Engineer Level III

Competency	Descriptors
<b>Strategic Orientation</b>	<ul style="list-style-type: none"> <li>● Designs, implements and evaluates business strategies that are underpinned by AI</li> <li>● Leads the organisation's Data Analytics/AI Centre of Excellence</li> <li>● Partners senior leadership to apply AI to the overall organisational strategy</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>● Effectively communicates the business value of AI across business units and functions</li> <li>● Articulates a compelling vision and manage organisational change brought about by AI and technology</li> <li>● Possesses deep understanding of technology and business, and is able to bridge strategy and execution for different stakeholders</li> </ul>
<b>AI Development and Management</b>	<ul style="list-style-type: none"> <li>● Architects and manages multiple complex AI applications across a large commercial organisation</li> <li>● Designs/establishes internal policies on periodic model tuning to cater to changes to business needs</li> </ul>
<b>Manage intellectual property (IP) processes and procedures</b>	<ul style="list-style-type: none"> <li>● Identifies potential IP commercialisation opportunities for developed AI solutions and/or models</li> <li>● Liaises with external vendors on the preparation and finalisation of IP applications</li> <li>● Ensures organisation's compliance with IP legislation and guidelines</li> </ul>

Competency	Descriptors
<b>Thought Leadership</b>	<ul style="list-style-type: none"> <li>● Evangelises the positive impact of data/AI both within the organisation and to external stakeholders/partners in commerce, the government and education</li> <li>● Effectively leads AI/ML Communities of Practice for AI professionals</li> <li>● Mentors aspiring AI/ML professionals to create a viable pipeline of AI talent</li> <li>● Keeps abreast of the latest developments in AI</li> </ul>
<b>AI Ethics, Bias and Governance</b>	<ul style="list-style-type: none"> <li>● Designs organisational policies to ensure the responsible and ethical use of AI in deployed platforms</li> </ul>