

LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

ISO 23053 — Framework for AI Systems Using Machine Learning

ISO Certification Programme



LAPT — London Academy of Professional Training

Address 85 Great Portland Street, W1W 7LT, London, United Kingdom

Email info@lapt.org

Telephone +44 7513 283044

Web lapt.org

Reference IIT-AII-23053 • ISO IT & Related Technologies

UKPRN 10067351 • Registered in England and Wales, company 4984798

AT A GLANCE

REFERENCE	IIT-AII-23053
AWARD	Certificate
ASSESSMENT	430 marks — 258 to pass (60%)
PREREQUISITES	None
VALIDITY	Lifetime
AWARDING BODY	LAPT — London Academy of Professional Training

CURRICULUM

1 AI Systems Evaluation and Optimisation 0 chapters85 marks	
2 Artificial Intelligence Fundamentals 5 chapters · 30 classes85 marks	
• 1 Understanding Machine Learning Concepts and Terminology — 6 classes › 1.1 Define Key Machine Learning Terminology › 1.2 Explore Types of Machine Learning Techniques › 1.3 Examine Supervised vs. Unsupervised Learning › 1.4 Identify Applications of Machine Learning in Real-world Scenarios › 1.5 Analyze the Role of Data in Machine Learning Models › 1.6 Evaluate Best Practices for Implementing Machine Learning • 2 Data Preparation and Preprocessing Techniques for Machine Learning — 6 classes › 2.1 Understand the Importance of Data Preparation in Machine Learning › 2.2 Identify Common Data Quality Issues Affecting Machine Learning › 2.3 Explore Techniques for Handling Missing Data in Datasets › 2.4 Apply Data Transformation Methods for Feature Scaling › 2.5 Demonstrate Data Encoding Techniques for Categorical Variables › 2.6 Create a Comprehensive Data Preprocessing Pipeline for ML Models • 3 Model Selection and Evaluation Metrics in Machine Learning — 6 classes › 3.1 Understand the Importance of Model Selection in Machine Learning › 3.2 Identify Key Factors Influencing Model Selection › 3.3 Explore Common Machine Learning Models and Their Use Cases › 3.4 Analyze Evaluation Metrics for Model Performance › 3.5 Compare Different Models Using Standard Evaluation Techniques › 3.6 Apply Best Practices for Model Selection and Evaluation in a Case Study	• 4 Advanced Machine Learning Algorithms and Techniques — 6 classes › 4.1 Explore Decision Trees and Their Applications › 4.2 Analyze Support Vector Machines for Classification Tasks › 4.3 Implement Neural Networks for Complex Data Problems › 4.4 Investigate Ensemble Learning Techniques for Improved Accuracy › 4.5 Evaluate Deep Learning Methods for Image Recognition › 4.6 Apply Reinforcement Learning to Dynamic Decision Making • 5 Ethical Considerations and Governance in AI Systems — 6 classes › 5.1 Identify Ethical Principles in AI Development › 5.2 Analyze Real-World AI Ethical Dilemmas › 5.3 Evaluate the Role of Governance in AI Systems › 5.4 Discuss the Impact of Bias in AI Algorithms › 5.5 Create a Framework for Responsible AI Use › 5.6 Propose Strategies for Ethical AI Implementation

• 1 Foundations of Ethics in AI: Key Concepts and Theories — 6

classes

- › 1.1 Define Key Ethical Concepts in AI and Machine Learning
- › 1.2 Explore Historical Theories of Ethics Relevant to AI
- › 1.3 Analyze the Role of Bias in AI Ethics
- › 1.4 Discuss Ethical Implications of Machine Learning Algorithms
- › 1.5 Evaluate Case Studies on Ethical Dilemmas in AI
- › 1.6 Propose Ethical Guidelines for AI Development

• 2 Understanding Bias and Fairness in Machine Learning — 6 classes

- › 2.1 Define and Identify Bias in Machine Learning Systems
- › 2.2 Explore Types of Bias: Data, Algorithmic, and User
- › 2.3 Examine Real-World Examples of Bias in AI Applications
- › 2.4 Assess the Impact of Bias on Fairness and Decision-Making
- › 2.5 Implement Techniques for Mitigating Bias in Machine Learning
- › 2.6 Develop an Action Plan for Ensuring Fairness in AI Projects

• 3 Transparency and Explainability in AI Systems — 6 classes

- › 3.1 Define Transparency and Explainability in AI Systems
- › 3.2 Explore the Importance of Transparency in AI Decision-Making
- › 3.3 Analyze Case Studies of AI Systems Lacking Explainability
- › 3.4 Identify Techniques for Enhancing Explainability in Machine Learning
- › 3.5 Evaluate Ethical Implications of Transparent AI Systems
- › 3.6 Develop a Framework for Implementing Explainable AI in Practice

• 4 Privacy and Data Protection in AI Applications — 6 classes

- › 4.1 Understand Key Principles of Privacy in AI
- › 4.2 Identify Data Protection Regulations Impacting AI
- › 4.3 Analyze Ethical Implications of Data Usage in AI
- › 4.4 Evaluate Risk Management Strategies for Personal Data
- › 4.5 Develop Best Practices for Ensuring Data Privacy in AI
- › 4.6 Create a Privacy Impact Assessment for an AI Application

• 5 Governance and Accountability in AI Systems**• 1 Introduction to ISO 23053: Understanding the Framework — 6**

classes

- › 1.1 Define the Key Concepts of ISO 23053
- › 1.2 Explore the Structure of the ISO 23053 Framework
- › 1.3 Identify the Objectives of Implementing the Framework
- › 1.4 Examine the Relevance of AI Systems in Machine Learning
- › 1.5 Analyze the Benefits of ISO 23053 for Organizations
- › 1.6 Apply Framework Principles to Real-World AI Scenarios

• 2 Key Components of ISO 23053: Structure and Elements — 6

classes

- › 2.1 Define the Structure of ISO 23053 Framework for AI Systems
- › 2.2 Identify the Key Elements of Machine Learning within ISO 23053
- › 2.3 Explore the Roles and Responsibilities Outlined in ISO 23053
- › 2.4 Analyze the Integration of Data Management in AI Systems
- › 2.5 Evaluate Compliance Requirements for ISO 23053 Implementation
- › 2.6 Apply ISO 23053 Framework to Real-World Machine Learning Scenarios

• 3 Risk Management in AI: Aligning with ISO 23053 — 6 classes

- › 3.1 Define Key Concepts in Risk Management for AI
- › 3.2 Identify ISO 23053 Risk Management Principles
- › 3.3 Analyze Risk Assessment Techniques in AI Systems
- › 3.4 Evaluate Risk Mitigation Strategies in Compliance with ISO 23053
- › 3.5 Implement a Risk Management Plan for AI Projects
- › 3.6 Review Case Studies of Risk Management in AI Implementations

• 4 Implementation Guidelines for ISO 23053 in Practice — 6 classes

- › 4.1 Explore the Key Principles of ISO 23053 for AI Systems
- › 4.2 Identify Stakeholders and Their Roles in ISO 23053 Implementation
- › 4.3 Develop a Step-by-Step Plan for Implementing ISO 23053
- › 4.4 Assess Current AI Systems Against ISO 23053 Guidelines
- › 4.5 Create a Monitoring and Evaluation Framework for ISO 23053
- › 4.6 Communicate Implementation Strategies to Stakeholders Effectively

• 5 Evaluation and Continuous Improvement under ISO 23053 — 6

classes

- › 5.1 Identify Key Evaluation Metrics for AI Systems
- › 5.2 Analyze Data Collection Methods for Continuous Improvement
- › 5.3 Implement Feedback Loops in AI Development
- › 5.4 Explore Case Studies of Successful AI Evaluations
- › 5.5 Develop a Continuous Improvement Action Plan
- › 5.6 Present Findings and Recommendations for Future AI Projects

• 1 Understanding Machine Learning Fundamentals — 6 classes

- › 1.1 Define and Differentiate Key Machine Learning Concepts
- › 1.2 Explore the Types of Machine Learning Approaches
- › 1.3 Identify Core Components of Machine Learning Models
- › 1.4 Analyze the Machine Learning Lifecycle Stages
- › 1.5 Evaluate Common Algorithms and Their Applications
- › 1.6 Implement a Basic Machine Learning Problem Using a Framework

• 2 Data Preprocessing and Feature Engineering — 6 classes

- › 2.1 Understand the Importance of Data Preprocessing
- › 2.2 Explore Common Data Cleaning Techniques
- › 2.3 Implement Data Normalization and Scaling Methods
- › 2.4 Identify and Handle Missing Data Effectively
- › 2.5 Perform Feature Selection to Improve Model Performance
- › 2.6 Apply Feature Engineering Techniques to Enhance Dataset Quality

• 3 Model Selection and Training Techniques — 6 classes

- › 3.1 Identify Key Factors in Model Selection
- › 3.2 Compare Different Machine Learning Algorithms
- › 3.3 Implement Data Preprocessing Techniques
- › 3.4 Evaluate Model Performance Metrics
- › 3.5 Apply Cross-Validation for Robustness
- › 3.6 Tune Hyperparameters for Optimal Results

• 4 Evaluating Model Performance and Tuning — 6 classes

- › 4.1 Define Key Metrics for Model Performance Evaluation
- › 4.2 Implement Classification Metrics: Precision, Recall, and F1 Score
- › 4.3 Analyze Regression Metrics: RMSE, MAE, and R^2
- › 4.4 Conduct Cross-Validation for Robust Model Testing
- › 4.5 Explore Hyperparameter Tuning Techniques for Model Optimization
- › 4.6 Apply Model Performance Evaluation in Real-world Scenarios

• 5 Advanced Machine Learning Techniques and Applications — 6 classes

- › 5.1 Explore Neural Network Architectures for Complex Data
- › 5.2 Apply Ensemble Learning Techniques to Improve Model Performance
- › 5.3 Implement Transfer Learning for Tailored AI Solutions
- › 5.4 Analyze Unsupervised Learning Methods for Pattern Discovery
- › 5.5 Evaluate Reinforcement Learning Strategies for Dynamic Environments
- › 5.6 Integrate Advanced Machine Learning Techniques in Real-World Applications