

Course No. 1189

AI Model Evaluation & Optimization Training Course

**MACHINE LEARNING & COMPUTER VISION
ARTIFICIAL INTELLIGENCE & APPLICATIONS**

DURATION

5 Days

DELIVERY

Classroom



Course Overview

Artificial intelligence systems are only as effective as the models that power them. As organizations increasingly rely on AI to support strategic decision-making, automate operations, enhance customer experiences, and optimize business processes, the ability to evaluate and continuously improve AI model performance has become a critical organizational capability. The AI Model Evaluation & Optimization Training Course equips professionals with the knowledge, methodologies, and practical techniques required to assess, validate, optimize, and monitor AI models throughout their lifecycle while ensuring reliability, fairness, efficiency, and business value.

This comprehensive training course provides participants with a structured understanding of AI model evaluation frameworks, performance metrics, optimization strategies, validation techniques, and model monitoring practices. Participants will learn how to identify performance limitations, diagnose model weaknesses, improve prediction accuracy, reduce bias, optimize computational efficiency, and support responsible AI deployment across various industries including government, finance, healthcare, energy, manufacturing, and oil and gas.

Organizations face increasing pressure to ensure that AI models remain accurate, explainable, secure, compliant, and aligned with changing operational requirements. Poorly evaluated models may introduce financial risks, operational inefficiencies, regulatory concerns, and reputational damage. This course demonstrates how systematic AI model evaluation and optimization contribute to improved business performance, stronger governance, enhanced decision-making, and sustainable AI adoption across enterprise environments.

Designed for executives, AI professionals, data scientists, engineers, analysts, technology managers, digital transformation leaders, and governance specialists, this AI Model Evaluation & Optimization Training Course combines international best practices with practical implementation techniques. Through real-world scenarios, performance analysis exercises, optimization workshops, and case studies, participants gain the skills required to continuously improve AI systems while aligning technical performance with organizational objectives and responsible AI principles.

Objectives

- Analyze AI model performance using industry-recognized evaluation metrics throughout the course and accurately interpret model effectiveness across different business applications.
- Assess the strengths and limitations of various AI models using structured validation methodologies and measurable performance indicators.
- Apply appropriate model evaluation techniques for classification, regression, clustering, forecasting, and generative AI solutions during practical exercises.
- Develop optimization strategies that improve model accuracy, robustness, scalability, and operational efficiency within realistic organizational scenarios.
- Evaluate model bias, fairness, transparency, and explainability using established responsible AI assessment frameworks.
- Implement cross-validation, hyperparameter tuning, and model selection techniques to enhance predictive performance during hands-on activities.
- Improve AI model reliability by identifying overfitting, underfitting, data quality issues, and performance degradation using practical evaluation tools.
- Design continuous AI monitoring processes that support model lifecycle management and long-term operational performance.
- Strengthen organizational AI governance by aligning evaluation practices with risk management, compliance, and business objectives.
- Align AI optimization initiatives with organizational performance goals, ensuring measurable improvements in efficiency, decision quality, and business value by the end of the course.

Who Should Attend

This course is designed for AI professionals, data scientists, machine learning engineers, data engineers, analytics specialists, business intelligence professionals, software developers, AI architects, MLOps engineers, and technical consultants responsible for developing, evaluating, deploying, or maintaining artificial intelligence models. It is equally valuable for professionals seeking to improve AI model quality, reliability, and operational performance across diverse business environments.

The program also benefits technology managers, digital transformation leaders, innovation managers, chief data officers, chief information officers, AI governance specialists, enterprise architects, cybersecurity professionals, quality assurance managers, risk management

professionals, compliance officers, and decision makers responsible for overseeing enterprise AI initiatives. Government organizations, ministries, public sector institutions, financial institutions, healthcare providers, and oil and gas organizations will gain practical knowledge for implementing robust AI evaluation and optimization practices aligned with organizational governance requirements.

Additionally, project managers, research professionals, innovation teams, operational excellence specialists, and professionals involved in AI procurement, vendor evaluation, and digital strategy will develop the capability to assess AI model performance, support informed investment decisions, and ensure AI systems deliver measurable business outcomes throughout their operational lifecycle.

Learning Outcomes

- By the end of this AI Model Evaluation & Optimization Training Course, participants will be able to:
- Evaluate AI model performance using appropriate quantitative and qualitative performance metrics.
- Select suitable evaluation methodologies for different machine learning and AI applications.
- Identify performance weaknesses including overfitting, underfitting, bias, variance, and data quality limitations.
- Apply optimization techniques that improve model accuracy, efficiency, scalability, and reliability.
- Perform hyperparameter tuning using structured optimization approaches to enhance predictive performance.
- Validate AI models using cross-validation, holdout testing, benchmarking, and comparative analysis techniques.
- Assess AI fairness, explainability, transparency, and ethical considerations within organizational AI initiatives.
- Monitor deployed AI models to detect model drift, performance degradation, and changing operational conditions.
- Develop AI model improvement plans that align technical enhancements with organizational objectives and governance requirements.
- Support continuous AI lifecycle management through effective evaluation, monitoring, optimization, and performance reporting practices.

Course Outline

DAY 01

Foundations of AI Model Evaluation

- Introduction to AI model evaluation principles and lifecycle management
- Types of AI models and performance expectations across industries
- Understanding supervised, unsupervised, reinforcement, and generative AI evaluation approaches
- Performance metrics for classification, regression, clustering, forecasting, and generative AI

PRACTICAL APPLICATION

Evaluating multiple AI models using business performance scenarios

DAY 02

Performance Assessment and Model Validation

- Data quality assessment and its impact on AI model performance
- Training, validation, and testing methodologies
- Cross-validation techniques and benchmarking best practices
- Detecting overfitting, underfitting, data leakage, and model instability

PRACTICAL APPLICATION

Model validation workshop using structured evaluation frameworks

DAY 03

AI Model Optimization Techniques

- Hyperparameter tuning methodologies and optimization strategies
- Feature engineering and feature selection for improved model performance
- Model comparison, ensemble learning, and performance improvement techniques
- Computational efficiency, scalability, and resource optimization

DAY 03 — CONTINUED

PRACTICAL APPLICATION

Optimizing AI models to improve predictive accuracy and operational efficiency

DAY 04**Responsible AI, Monitoring, and Continuous Improvement**

- AI fairness, bias detection, explainability, and transparency
- Model governance, compliance, and organizational AI risk management
- AI monitoring, model drift detection, and continuous performance measurement
- MLOps concepts supporting AI evaluation and optimization

PRACTICAL APPLICATION

Designing an enterprise AI monitoring and governance framework

DAY 05**Enterprise AI Optimization Strategy and Implementation**

- Building an organizational AI model evaluation framework
- AI performance reporting and executive decision support
- Integrating AI optimization into digital transformation and operational excellence initiatives
- Developing continuous improvement strategies for enterprise AI systems

FINAL WORKSHOP

Designing a comprehensive AI Model Evaluation & Optimization implementation roadmap, including performance assessment, optimization priorities, governance considerations, monitoring strategy, and organizational action plan for sustainable AI excellence.



Register or Request More Information

Course page: <https://quest-training.com/courses/ai-model-evaluation-optimization-training-course>

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