

AI+ Ethics™

Program Detailed Curriculum

Executive Summary

The AI+ Ethics Certification is an industry-oriented program enabling professionals to distinguish themselves in ethically utilizing emerging AI technologies. Business and government organizations actively seek ethics professionals to mitigate risks and guide decision-making in AI application design. The brand's values and financial impacts resulting from ethical violations can significantly affect an organization's image. Ethical leaders play a crucial role in implementing strategies to promote fairness, minimize risks, and uphold ethical standards, ensuring the overall well-being of their organizations.

Certification Prerequisites

- Basic knowledge of artificial intelligence, machine learning concepts, and their applications.
- Understanding of the social, cultural, and political implications of AI technologies.
- Understanding of professional ethics, including honesty, integrity, and responsibility.
- Exposure to real-world case studies that highlight ethical dilemmas in AI, promoting practical understanding.
- Ability to critically assess AI technologies and make ethical decisions in designing, deploying, and managing AI systems.
- Familiarity with relevant laws, regulations, and industry standards that govern AI usage.

Exam Blueprint

Number of Questions 50	Passing Score 35/50 or 70%	Duration 90 Minutes	Format Online via AI Proctoring platform	Question Type Multiple Choice/Multiple Response
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Module 1

Overview of AI Ethics & Societal Impact

1.1 Introduction to Ethical Considerations in AI

- **Overview of Ethical Considerations in AI:** Explore the foundations and significance of Ethical AI, delving into its historical context and the evolving ethical considerations in AI development.

1.2 Understanding The Societal Impact of AI Technologies

- **Introduction to AI and its Societal Significance:** Explore AI's evolution, current technologies, and societal impact for understanding its profound influence on contemporary societies.
- **AI and Employment:** Understand AI's impact on job automation, emergence of new job categories. Understand implications for employment landscape.
- **AI's Impact on the Economy:** Delve into AI's economic impact on productivity, growth, industry shifts, and global inequality, shaping contemporary economic landscapes worldwide.
- **Ethics and Privacy in the Age of AI:** Navigate through AI's ethical landscape, privacy implications, and best practices for responsible development and deployment.

- **AI and Social Interaction:** Explore AI's impact on social dynamics and human connections in communication and social media realms.
 - **Lifestyle Changes Driven by AI:** Discover AI's role in daily routines, navigating convenience versus dependency, and bridging digital accessibility gaps.
 - **AI in Healthcare:** Delve into AI's healthcare revolution on diagnosis, treatment, ethics, and personalized medicine's future prospects.
 - **AI in Education:** Explore AI's influence on personalized learning, accessibility, content delivery, assessment, and student readiness for tomorrow.
 - **AI and the Environment:** Evaluate AI's contributions to environmental monitoring, sustainable development, and managing energy consumption's ecological repercussions.
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1.3 Strategies for Conducting Social and Ethical Impact Assessments

- **Framework Establishment and Stakeholder Involvement:** Discover AI impact assessment frameworks and engaging stakeholders for ethical AI development and deployment.
- **Assessment Process and Methodologies:** Explore assessment process and methodologies for evaluating social and ethical impacts of AI, ensuring responsible deployment.
- **Reporting, Recommendations, and Continuous Monitoring:** Learn to craft comprehensive AI impact reports, offer strategic recommendations, and implement continuous monitoring for ethical and social assessments.

Module 2

Bias and Fairness in AI

2.1 Exploration of Biases in Data and Algorithms

- **Data Collection and Representation:** Explore data collection methods, biases, and ethical considerations in AI, ensuring fair representation and accurate analysis.
 - **Algorithmic Bias Detection and Management:** Learn to identify, evaluate, and mitigate biases in AI systems, fostering fairness, transparency, and responsible algorithmic decision-making.
 - **Bias Impact on Decision-Making:** Understand how biases in data and algorithms affect decision-making processes within AI systems, discerning ethical implications and mitigation strategies.
 - **Ethical and Regulatory Considerations:** Explore ethical principles and regulations guiding AI development, addressing biases, fairness, accountability, transparency, and societal impacts critically.
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2.2 Strategies for Mitigating Bias and Ensuring Fairness in AI Systems

- **Develop Diverse Data Sets:** Address strategies for curating inclusive data to mitigate biases and promote fairness in AI systems.
- **Promote Algorithmic Transparency:** Explore methods to make AI systems transparent, accountable, and mitigate biases for fair outcomes.
- **Conduct Regular Auditing:** Review AI systems to detect and address bias, ensuring fairness and accountability in deployment.
- **Adhere to Ethical AI Frameworks:** Explore principles and practices for ensuring fairness, transparency, and accountability in AI development.
- **Stakeholder Involvement:** Navigate through diverse viewpoints for equitable AI, fostering transparency, trust, and effectiveness in bias mitigation strategies.

Transparency and Explainable AI

3.1 Importance of Transparent AI Systems

- **Building Trust:** Explore strategies for fostering confidence in AI systems through transparency, accountability, and ethical practices.
 - **Facilitating Accountability:** Understand mechanisms for ensuring responsibility in AI systems, fostering trust through transparency and traceability measures.
 - **Promoting Ethical Standards:** Explore principles guiding AI development, ensuring transparency, fairness, and accountability in AI systems for societal benefit.
 - **Enhancing User Experience:** Learn designing AI interfaces that prioritize user needs, fostering trust through transparency, empathy, and intuitive interactions.
 - **Regulatory Compliance:** Navigate through legal landscapes, fostering transparency in AI, meeting regulatory standards for ethical and accountable system development.
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3.2 Techniques for Explaining AI Models to Diverse Stakeholders

- **Simplified Visualizations:** Equip learners with skills to create clear, engaging visuals facilitating effective communication of AI model insights to various stakeholders.
 - **Use Case Examples:** Illustrate practical applications of AI models, aiding diverse stakeholders' understanding through real-world scenarios.
 - **Layered Explanations:** Employ structured, accessible explanations to convey AI model insights effectively to diverse stakeholders in comprehensible layers.
 - **Interactive Demonstrations:** Delve into hands-on showcases, guiding stakeholders through AI models interactively, fostering understanding and engagement across diverse audiences.
 - **Tailored Communication:** Learn strategies to communicate AI concepts effectively, addressing diverse stakeholder needs for comprehension and engagement.
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3.3 Guided Projects on Designing and Analysis of AI Systems with Ethical Considerations

- **AI Ethics Simulator:** Explore ethical dilemmas in AI design through interactive simulations, fostering critical analysis and responsible decision-making
 - **Fairness in Machine Learning:** Discover fairness principles in AI, addressing biases, discrimination, and equity concerns crucial for ethically robust machine learning systems.
 - **Privacy-Preserving AI Models:** Explore techniques ensuring privacy in AI models, addressing ethical concerns, fostering responsible AI development within societal frameworks.
 - **AI for Social Good:** Examine AI's ethical implications, strategizes for positive societal impact, and integrates ethical considerations into design.
 - **Explainable AI:** Explore techniques ensuring AI systems' transparency and accountability, addressing societal concerns while enhancing user trust and understanding.
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Privacy and Security Issues in AI

4.1 Examination of Privacy Concerns Related to AI

- **Data Collection and Consent:** Explores ethical AI data gathering practices, emphasizing informed consent and privacy protection in AI technologies.

- **Surveillance and Monitoring:** Discover AI's role in privacy infringement, examining ethical implications and strategies for safeguarding individual rights.
 - **Data Security and Breaches:** Analyze AI's data security landscape, addressing breaches, threats, and prevention strategies for enhanced privacy protection and risk management.
 - **Algorithmic Transparency and Accountability:** Examine ethical implications, legal frameworks, and technical mechanisms in AI, fostering accountability and privacy safeguards.
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4.2 Strategies for Ensuring the Security of AI Systems and Data

- **Robust Encryption and Access Control:** Learn robust encryption methods and access control techniques to safeguard AI systems and data integrity effectively.
- **Regular Security Audits and Compliance:** Discover the importance of Regular Security Audits and Compliance in ensuring AI systems align with regulations, fortifying data security practices.
- **Advanced Threat Detection and Response:** Understand advanced threat detection techniques to proactively identify and respond to complex security risks within AI systems effectively.
- **Ethical AI Design and Development:** Delve into ethical AI design principles, guidelines, fostering trust, fairness, accountability, and transparency for secure, responsible AI systems.
- **Continuous Education and Training:** Explore the importance of evolving skillsets vital for securing AI systems and data.

Module 5

Accountability and Responsibility

5.1 Concepts of Accountability in AI Development and Deployment

- **Transparency:** Explore mechanisms ensuring openness in AI systems, fostering trust, fairness, and understanding in development and deployment.
 - **Compliance with Legal and Ethical Standards:** Navigate through legal and ethical obligations in AI, emphasizing compliance with standards for responsible development and deployment.
 - **Auditability and Reporting:** Focus on mechanisms ensuring AI decisions can be traced, validated, and reported transparently for accountability and trustworthiness.
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5.2 Responsibilities of AI Practitioners and Organizations

- **Ethical AI Development:** Explore principles, guidelines, and tools essential for responsible AI creation and implementation by practitioners.
- **Data Privacy and Protection:** Address ethical considerations, legal frameworks, and mitigation tactics essential for AI professionals and organizations.
- **Transparency and Explainability:** Explore methods for making AI systems understandable, accountable, and interpretable for stakeholders' trust.
- **Continuous Learning and Improvement:** Underline perpetual skill enhancement and adaptation for AI practitioners and entities to maintain relevance and efficacy.
- **Stakeholder Engagement and Communication:** Emphasize clear communication and collaboration techniques vital for AI practitioners and organizations to foster trust and understanding.

Legal and Regulatory Issues

6.1 Overview of Relevant Laws and Regulations Pertaining to AI

- **European Union (EU):** Covers legal frameworks governing AI, emphasizing GDPR, AI Act, and ethical guidelines for AI development and deployment.
 - **United States:** Overview of US laws and regulations concerning AI, including privacy, intellectual property, liability, and ethical considerations.
 - **United Kingdom:** Explores AI laws and regulations, covering ethics, data protection, intellectual property, liability, and governance frameworks comprehensively.
 - **China:** Explore regulations, data governance, ethical considerations, and impacts on AI innovation and implementation.
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6.2 Understanding the Global Regulatory Issues for AI Technologies

- **Data Privacy and Security:** Explore data privacy and security regulations shaping AI technologies globally, emphasizing compliance and risk mitigation strategies.
 - **Ethical AI Development and Use:** Understand principles, frameworks, and dilemmas in creating and utilizing AI systems responsibly, addressing ethical considerations in development and deployment.
 - **Intellectual Property (IP) and AI-generated Content:** Highlight legal frameworks governing ownership, protection, and rights of AI-generated content within intellectual property laws worldwide.
 - **Liability and Accountability:** Examine legal responsibility, ethical dilemmas, and practical solutions for addressing liability and accountability concerns within AI technology.
 - **AI in Surveillance and Security:** Analyze AI's role in surveillance and security, scrutinizing global regulations and ethical dilemmas in contemporary technological landscapes.
 - **Autonomous Vehicles and Robotics:** Explore global regulations impacting autonomous vehicles and robotics, addressing safety, ethics, liability, and societal implications for AI technologies.
 - **AI in Employment and the Workplace:** Investigate AI's role in workplace dynamics, focusing on regulations, ethical considerations, and societal impacts within global contexts.
 - **International Cooperation and Standards:** Delve into international collaboration and standardization efforts essential for addressing diverse regulatory challenges in AI technology across borders.
 - **Consumer Protection:** Examine legal frameworks ensuring AI products meet consumer rights, privacy, safety standards, fostering trust in AI technologies.
 - **AI in Healthcare & Warfare:** Analyze AI's evolving role in healthcare innovation and its ethical considerations, alongside its intersection with warfare strategies and global regulatory complexities.
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6.3 Case Studies

- **GDPR Compliance in AI Systems:** Real-world implications of GDPR on AI systems: Address compliance challenges, ethical considerations, and strategies for alignment.
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6.4 Legal Compliance of AI Tools

- **IBM Watson OpenScale:** Explore IBM Watson OpenScale for legal compliance in AI tools, covering monitoring, bias detection, and explainability for transparency.
- **Google AI Platform's What-If Tool:** Delve into Google AI Platform's What-If Tool to analyze AI model outcomes, assess fairness, and mitigate bias for legal compliance.
- **Salesforce Einstein:** Analyze legal compliance aspects of Salesforce Einstein, addressing data governance, privacy, fairness, and regulatory alignment.

- **PWC's Responsible AI Toolkit:** Navigate through legal obligations, ethical guidelines, and best practices in AI tool implementation.
- **FICO Analytics Workbench:** Explore legal compliance aspects of AI tools in finance, covering regulations, risk management, and governance.

Module 7

Ethical Decision-Making Frameworks

7.1 Introduction to Frameworks for Making Ethical Decisions in AI

- **IEEE Ethically Aligned Design:** Explore IEEE Ethically Aligned Design for AI, focusing on frameworks and principles to guide ethical decision-making in AI development.
 - **Asilomar AI Principles:** Delve into the Asilomar AI Principles, essential guidelines for fostering ethical AI development, emphasizing human values and societal well-being.
 - **EU Guidelines for Trustworthy AI:** Analyze EU Guidelines for Trustworthy AI, focusing on principles, assessment tools, and real-world applications, advancing ethical decision-making frameworks in AI development.
 - **Google's AI Principles:** Explore Google's AI Principles, focusing on key ethical pillars: fairness, accountability, privacy, and societal impact, vital for ethical AI framework understanding.
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7.2 Case Studies and Applications of Ethical Decision-Making

- **IBM Watson Health:** Explore ethical dilemmas in IBM Watson Health's applications, emphasizing responsible decision-making and implications for society.
 - **Microsoft's AI for Accessibility:** Explore Microsoft's AI for Accessibility program, analyzing ethical dimensions, impacts, and challenges in leveraging AI for inclusive technology.
 - **DeepMind's AI for Energy:** Examine ethical challenges in applying AI for Energy by scrutinizing DeepMind's initiatives, discerning ethical decision-making paradigms in practical contexts.
 - **Autonomous Vehicles (Waymo, Tesla):** Analyze ethical dilemmas in autonomous vehicles, focusing on Waymo and Tesla, exploring real-world applications of ethical decision-making frameworks.
 - **Facial Recognition (IBM, Amazon):** Delve into ethical quandaries surrounding facial recognition, dissecting IBM and Amazon case studies to refine ethical decision-making processes.
 - **Google's Project Maven Withdrawal:** Case study of Google's withdrawal from Project Maven explores ethical implications, corporate accountability, and stakeholder considerations in technology decision-making.
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7.3 Use of Simulation Platforms in Ethical Decision-Making

- **OpenAI Gym:** Utilize OpenAI Gym to simulate ethical dilemmas, fostering critical thinking and decision-making skills in ethical scenarios.
- **Moral Machine by MIT:** Explore MIT's Moral Machine, analyzing ethical dilemmas via simulation to inform decision-making in complex moral scenarios.
- **NetLogo:** Explore ethical dilemmas through agent-based modeling using NetLogo, fostering decision-making skills within simulated environments for ethical analysis.
- **Shadow Health:** Utilize Shadow Health simulation platform to develop ethical decision-making skills through immersive scenarios, enhancing professional judgment and practice.
- **The Ethics Game:** Explore ethical dilemmas in decision-making through simulation platforms, fostering critical thinking and ethical awareness.

AI Governance & Best Practices

8.1 Principles and Functions of International AI Governance

- **Principles of International AI Governance:** Explore Principles of International AI Governance, covering Ethical and Human-Centered AI, Accountability, Transparency, Fairness, Non-discrimination, Privacy, Data Protection, Safety, Security, Collaboration, Cooperation, Interoperability, and Standards for responsible global AI development.
 - **Functions of International AI Governance:** Highlight crucial functions of International AI Governance, including norm and standard development, information sharing, capacity building, monitoring, crisis response, research, public engagement, policy coordination, and legal frameworks for review and adaptation.
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8.2 Best Practices for Integrating AI Ethics into Organizational Policies

- **Executive Commitment:** Highlight the pivotal role of leadership endorsement in shaping ethical AI policies, ensuring organizational integrity and compliance.
 - **Dedicated Ethics Teams:** Learn the importance and functions of dedicated ethics teams in implementing and upholding AI ethics within organizational frameworks.
 - **Ethics Framework:** Explore foundational principles and methodologies guiding ethical AI integration within organizational policies for sustainable and responsible practices.
 - **Ethics by Design:** Delve into methodologies ensuring ethical principles are integrated into AI systems from inception to deployment.
 - **Regular Training:** Foster AI ethics understanding and compliance among organizational members through ongoing education, reinforcing ethical decision-making in AI integration.
 - **Transparency and Explainability:** Explore strategies for transparent AI systems and articulate methods for ensuring understandable outcomes aligning with ethical principles.
 - **Diversity and Inclusion:** Navigate through the essential components and the implementations involved to identify the prospects of AI technologies and development.
 - **Data Governance:** Learn essentials of data Governance for successful AI implementation, integrating legal measures, frameworks, and best practices.
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8.3 Case Studies on AI Governance

- **Google's AI Principles (2018):** Examine Google's AI Principles to analyze ethics, transparency, accountability, and societal impact in AI development and deployment.
- **EU's General Data Protection Regulation (GDPR):** Explore EU's GDPR, focusing on data protection, compliance, and ethical considerations in AI implementations.
- **Facial Recognition Bans (Various Cities):** Examines municipal bans on facial recognition technology, exploring ethical, legal, and societal implications in diverse urban contexts worldwide.
- **AI Ethics Board Disbandment (Facebook, 2019):** Explore Facebook's dissolution of its AI ethics board, analyzing implications for AI governance and corporate responsibility.
- **Singapore's Model AI Governance Framework (2019):** Analyze Singapore's AI Governance Framework, emphasizing principles, regulations, and strategies for ethical AI deployment and management.

Global AI Ethics Standards

9.1 Explore Standards like IEEE's Ethically Aligned Design

- **Key Ethical Standard in AI:** Delve into ethical design with IEEE's Ethically Aligned Design (EAD) course. Covering principles, human rights, transparency, accountability, bias, data privacy, security, and societal impact, it guides responsible development of autonomous systems.
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9.2 Comparative Case Studies on Standard Implementations

- **Real World Examples:** Delve into global AI ethics via case studies: Europe's GDPR vs. U.S. AI Principles, Canada vs. China, IEEE vs. ISO/IEC JTC 1/SC 42.
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9.3 Tools for Evaluating AI Systems Against Global Standards

- **Key AI Tools:** Explore AIF360 to measure AI systems' fairness against global benchmarks, vital for ensuring ethical and unbiased AI development.
- **Model Cards:** Assess AI systems' compliance with global standards via structured documentation, facilitating transparency, accountability, and ethical evaluation.
- **TensorFlow Privacy:** Explore TensorFlow Privacy for integrating privacy-preserving techniques into AI systems, ensuring compliance with global privacy standards in
- **OpenAI Gym:** Explore OpenAI Gym, a toolkit for benchmarking AI systems against global standards, facilitating evaluation and comparison in diverse environments.
- **ISO/IEC JTC 1/SC 42:** Explore ISO/IEC JTC 1/SC 42 standards for assessing AI systems against global benchmarks.
- **Partnership on AI:** Assess AI systems against global standards, fostering collaboration and ethical considerations for industry advancement.
- **Robustness Gym:** Explore tools for assessing AI systems' resilience to global standards, ensuring reliability and effectiveness in diverse environments.
- **EU AI Act & Ethics Guidelines:** Explore EU AI Act & Ethics Guidelines for assessing AI systems' compliance with ethical standards and regulatory requirements