Training course on Artificial Intelligence (AI) and Machine Learning (ML) in Social Protection Delivery

Professional Development Training Course Outline

Category	Social Protection	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Artificial Intelligence (AI) and Machine Learning (ML) are rapidly reshaping public service delivery, offering unprecedented opportunities to revolutionize social protection programs. From precisely identifying beneficiaries and anticipating vulnerabilities to preventing fraud and personalizing support, AI/ML holds the promise of making social safety nets more efficient, responsive, and impactful. Training Course on Artificial Intelligence (AI) and Machine Learning (ML) in Social Protection Delivery is meticulously designed to equip with the expert knowledge, strategic frameworks, and practical tools to strategically conceptualize, ethically design, and responsibly implement AI/ML-powered solutions in social protection systems. The program delves into core AI/ML concepts, their diverse applications across the social protection delivery chain, data requirements and governance, algorithmic bias detection and mitigation, privacy-preserving AI, ethical AI frameworks, and project management for AI deployment, blending rigorous analytical frameworks with practical, hands-on application, extensive global case studies (with a strong emphasis on successful and challenging African experiences and lessons from Kenya), and intensive AI use case development, ethical review, and pilot planning exercises. Participants will gain the strategic foresight and technical expertise to confidently lead and participate in the secure, fair, and impactful adoption of AI/ML, fostering unparalleled precision, responsiveness, and accountability in social protection delivery, thereby securing their position as indispensable leaders in building advanced, human-centered social welfare systems.

Training Course on Artificial Intelligence (AI) and Machine Learning (ML) in Social Protection Delivery is meticulously designed to equip with the expert knowledge, strategic frameworks, and practical tools delves into nuanced methodologies for conducting comprehensive feasibility studies for AI/ML integration into existing social protection workflows, mastering sophisticated techniques for preparing, cleaning, and labeling large-scale, diverse datasets for machine learning training, and exploring cutting-edge approaches to designing interpretable AI models that foster transparency, building robust frameworks for continuous monitoring of AI model performance and bias, and developing comprehensive strategies for human-in-the-loop decision-making in AI-assisted social protection. A significant focus will be placed on understanding the interplay of AI/ML with national digital public infrastructure, the specific challenges of addressing data poverty and digital literacy in the context of advanced analytics, and the practical application of ethical AI

principles to safeguard against discrimination and ensure equitable access to benefits.

Programme Curriculum

Training Course on Artificial Intelligence (AI) and Machine Learning (ML) in Social Protection Delivery

Introduction

Artificial Intelligence (AI) and Machine Learning (ML) are rapidly reshaping public service delivery, offering unprecedented opportunities to revolutionize social protection programs. From precisely identifying beneficiaries and anticipating vulnerabilities to preventing fraud and personalizing support, AI/ML holds the promise of making social safety nets more efficient, responsive, and impactful.[20] However, harnessing this transformative potential demands a rigorous understanding of both the immense opportunities and the profound ethical, technical, and societal challenges, particularly concerning algorithmic bias, data privacy, and accountability. In a digitally advancing nation like Kenya, with its robust mobile money penetration, established social registries (like the ESR), and a strong Data Protection Act, the responsible integration of AI/ML into social protection is not just a technological frontier but a critical pathway to achieving equitable and dignified welfare outcomes. **Training Course on Artificial Intelligence (AI) and Machine Learning (ML) in Social Protection Delivery** is meticulously designed to equip with expert knowledge, strategic frameworks, and practical tools to **strategically conceptualize, ethically design, and responsibly implement AI/ML-powered solutions in social protection systems.** The program delves into **core AI/ML concepts, their diverse applications across the social protection delivery chain, data requirements and governance, algorithmic bias detection and mitigation, privacy-preserving AI, ethical AI frameworks, and project management for AI deployment,** blending **rigorous analytical frameworks with practical, hands-on application, extensive global case studies (with a strong emphasis on successful and challenging African experiences and lessons from Kenya), and intensive AI use case development, ethical review, and pilot planning exercises.** Participants will gain the strategic foresight and technical expertise to confidently lead and participate in the secure, fair, and impactful adoption of AI/ML, fostering unparalleled **precision, responsiveness, and accountability** in social protection delivery, thereby securing their position as indispensable leaders in **building advanced, human-centered social welfare systems.**

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institutional and regulatory barriers, attendees will develop the **strategic acumen** to confidently lead and participate in the secure, fair, and effective deployment of AI/ML, ensuring that social protection programs are not only **more efficient and targeted but also uphold fundamental human rights, promote social justice, and genuinely empower vulnerable populations**, thereby securing their position as indispensable leaders in **shaping the future of data-driven social welfare.**

Course Objectives:

Upon completion of this course, participants will be able to:

1. **Analyze core concepts and strategic responsibilities** of **Artificial Intelligence (AI) and Machine Learning (ML)** in social protection delivery.
2. **Master sophisticated techniques** for **identifying and prioritizing appropriate AI/ML use cases** across the social protection delivery chain (e.g., targeting, fraud detection, personalization).
3. **Develop robust methodologies** for **preparing and managing high-quality, representative datasets** essential for AI/ML model training and deployment.
4. **Implement effective strategies** for **designing and integrating AI/ML solutions into existing social protection information systems** and workflows.
5. **Manage complex considerations** for **detecting, mitigating, and monitoring algorithmic bias** to ensure fairness and non-discrimination.
6. **Apply robust strategies** for **ensuring data privacy and cybersecurity** specifically for AI/ML systems handling sensitive social protection data.
7. **Understand the deep integration of predictive analytics and adaptive learning** to enhance shock-responsive social protection and proactive interventions.
8. **Leverage knowledge of global best practices and lessons learned** from countries that have successfully piloted or deployed AI/ML in social protection, with a strong focus on African experiences and relevant Kenyan initiatives.
9. **Optimize strategies for building a human-centered AI approach**, ensuring human oversight and interpretability of AI-driven decisions.
10. **Formulate specialized recommendations** for **establishing comprehensive data governance and ethical AI frameworks** for social protection.
11. **Conduct comprehensive assessments** of the ethical implications, societal impacts, and regulatory requirements of AI/ML adoption in social protection.
12. **Navigate challenging situations** related to **capacity building, stakeholder engagement, and overcoming resistance to technological change** in AI/ML adoption.
13. **Develop a holistic, ethical, and operationally viable approach** to **Artificial Intelligence and Machine Learning in Social Protection Delivery,** fostering more precise, responsive, and equitable social welfare programs.

Target Audience:

This course is designed for professionals interested in Artificial Intelligence (AI) and Machine Learning (ML) in Social Protection Delivery:

1. **Policymakers & Senior Government Officials:** From Ministries of Social Protection, ICT, Planning, and Finance.
2. **Social Protection Program Managers & Directors:** Responsible for program design, implementation, and reform.[21]
3. **Data Scientists & Machine Learning Engineers:** Working in public sector, research, or development.
4. **ICT & Digital Transformation Specialists:** Involved in digitalizing public services and social protection.

5. **Monitoring & Evaluation (M&E) Professionals:** Seeking to leverage advanced analytics for impact assessment.
6. **Legal & Ethical Advisors:** Focusing on data protection, human rights, and responsible AI governance.
7. **Public Financial Management (PFM) Specialists:** Interested in using AI for fraud detection and resource optimization.
8. **Development Partners & International Organizations:** Supporting innovation and digital solutions in social protection.

Course Duration: 10 Days

Course Modules:

- **Module 1: Introduction to AI/ML in Social Protection (Day 1)**
  - Defining AI, ML, and their distinction from traditional analytics.
  - The transformative potential of AI/ML across the social protection delivery chain.
  - Key benefits: Enhanced targeting, fraud reduction, efficiency, personalization, responsiveness.
  - Overview of the current landscape of AI/ML adoption in social protection globally.
  - Introduction to the ethical and societal considerations of AI in public services.
- **Module 2: AI/ML Applications: Targeting and Eligibility (Day 1 & 2)**
  - Leveraging ML for improved proxy-means testing (PMT) and vulnerability assessments.
  - Using geospatial data and satellite imagery for identifying vulnerable populations.[22]
  - AI for dynamic eligibility adjustments based on evolving socio-economic conditions.
  - Challenges of data availability and representativeness for accurate targeting.
  - Case studies of AI-driven targeting in social protection programs.
- **Module 3: AI/ML Applications: Fraud Detection and Error Reduction (Day 2 & 3)**
  - Applying anomaly detection and classification algorithms for identifying fraudulent patterns.[23]
  - Detecting duplicate beneficiaries, suspicious transactions, and program misuse.[24]
  - Utilizing machine learning to analyze large datasets for irregularities.[25]
  - Balancing aggressive fraud detection with minimizing false positives and exclusion.
  - Practical examples of AI-powered fraud analytics from social protection and direct benefit transfers.
- **Module 4: AI/ML Applications: Personalization and Service Delivery (Day 3 & 4)**
  - Designing AI-powered chatbots and virtual assistants for beneficiary support and information.
  - Personalizing social protection interventions based on individual needs and profiles.
  - Automating routine administrative tasks (e.g., document classification, verification).[26]
  - AI for improving communication and grievance redressal mechanisms.[27]
  - Enhancing accessibility through AI: speech recognition, transliteration models.[28]
- **Module 5: AI/ML Applications: Predictive Analytics and Adaptive Social Protection (Day 4 & 5)**
  - Using ML to predict shocks (e.g., climate disasters, economic crises) and anticipate needs.
  - Designing shock-responsive social protection systems using AI-driven early warnings.
  - Predicting transitions in and out of poverty or program eligibility.
  - AI for proactive referrals to complementary social services.
  - Case studies: AI in adaptive social protection for climate resilience.
- **Module 6: Data for AI/ML in Social Protection (Day 5 & 6)**
  - Data requirements for effective AI/ML models: Volume, velocity, variety, veracity.
  - Strategies for collecting, cleaning, and preparing social protection datasets.
  - Data labeling, feature engineering, and dataset balancing techniques.
  - Challenges of data scarcity, fragmentation, and quality in social protection.
  - The role of social registries (e.g., Kenya's ESR) as foundational data infrastructure for AI.
- **Module 7: Algorithmic Bias and Fairness in AI (Day 6)**

    - Understanding sources of algorithmic bias: Data bias, algorithmic bias, human bias.
    - Impact of bias on vulnerable populations and social equity in social protection.
    - Techniques for detecting and measuring bias in AI models (e.g., fairness metrics).[29]
    - Strategies for mitigating bias: Data re-sampling, algorithmic adjustments, post-processing.
    - The imperative of fair and non-discriminatory AI for social protection.
- **Module 8: Data Privacy and Cybersecurity for AI/ML Systems (Day 7)**
    - Privacy risks inherent in large-scale data collection for AI/ML.[30]
    - Privacy-enhancing technologies (PETs): Differential privacy, federated learning, homomorphic encryption.
    - Securing AI/ML models and data pipelines from cyber threats.[31]
    - Compliance with data protection regulations (e.g., Kenya's DPA) for AI/ML deployments.[32]
    - Responsible data sharing and governance for AI initiatives.[33]
- **Module 9: Ethical AI Frameworks and Governance (Day 8)**
    - Key ethical principles for AI in social protection: Human oversight, transparency, accountability, safety, proportionality.[34]
    - Developing ethical guidelines and codes of conduct for AI development and deployment.
    - The role of human-in-the-loop: Maintaining human agency and decision-making.
    - Establishing AI ethics committees and independent oversight bodies.
    - Conducting AI impact assessments and ethical reviews.
- **Module 10: AI Project Management and Capacity Building (Day 9)**
    - Phases of an AI project lifecycle: Problem definition, data collection, model development, deployment, monitoring.[35]
    - Building multi-disciplinary teams for AI in social protection (data scientists, domain experts, ethicists).
    - Strategies for capacity building: Training, recruitment, partnerships with academia/private sector.
    - Managing stakeholder expectations and fostering a data-driven, AI-literate culture.
    - Overcoming institutional and political economy barriers to AI adoption.
- **Module 11: Responsible AI Deployment and Monitoring (Day 9)**
    - Strategies for piloting AI solutions and iterating based on results.
    - Continuous monitoring of AI model performance, accuracy, and bias in production.[36]
    - Establishing robust auditing and explainability mechanisms for AI decisions.
    - Developing clear communication strategies for beneficiaries about AI usage.
    - Ensuring accountability mechanisms for AI system failures or adverse outcomes.
- **Module 12: Future of AI in Social Protection & Action Planning (Day 10)**
    - Emerging trends in AI: Generative AI, Responsible AI, AI for Good.
    - The role of AI in shaping the future of adaptive and inclusive social protection systems.
    - Opportunities for cross-sectoral AI applications (e.g., health, education, labor).
    - Developing a national AI strategy for social protection, considering Kenya's co

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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