FOReSiGHT

SYLLABUS

Course Title: Artificial Intelligence – an Intro

Course Description:

This course offers a comprehensive exploration of the fundamental principles, techniques, and applications of AI.

Participants will gain insights into machine learning, neural networks, natural language processing, and computer vision, alongside understanding their practical implications.

The course is part of our FOReSiGHT Kit for Foreseeing and Integrating Algorithmic Governance Skills.

Course Objectives:

By the end of this course, students will be able to:
1. Understand the foundational principles and concepts of artificial intelligence.
2. Differentiate between various AI techniques such as machine learning, neural networks, natural language processing, and computer vision.
3. Apply basic AI techniques to solve real-world problems.
4. Recognize the ethical considerations and challenges associated with AI implementation.
5. Stay updated with the latest trends and advancements in the field of AI.
6. Understand the significance of AI in the context of algorithmic governance.

Key Topics:

Module 1: Introduction to Artificial Intelligence
- History and Evolution of AI
- Defining AI: Capabilities and Limitations
- AI vs. Human Intelligence

Module 2: Machine Learning (ML)
- Basics of ML and its Algorithms
- Supervised vs. Unsupervised Learning
- Real-world Applications of ML

Module 3: Neural Networks and Deep Learning
- Introduction to Neural Networks
- Basics of Deep Learning
- Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN)

Module 4: Natural Language Processing (NLP)
- Basics of NLP
- Text Analysis and Sentiment Analysis
- Chatbots and Conversational AI

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Module 5: Computer Vision
- Introduction to Computer Vision
- Image Recognition and Object Detection
- Applications in Healthcare, Security, and More

Module 6: Ethics and Challenges in AI
- Ethical Considerations in AI Development and Deployment
- Bias and Fairness in AI
- Future Challenges and the Road Ahead

Module 7: AI and Algorithmic Governance
- Introduction to Algorithmic Governance
- Role of AI in Decision-making Processes
- Implications for Businesses and Societies

Course Materials:

Course Slides / Reading List / Videos

Proposed Assessment:

1. **Module Quizzes (40% of final grade)**
   - **Objective:** Test participants' understanding and retention of each module's content.
   - **Format:** Multiple-choice, true/false, and short-answer questions.
   - **Frequency:** At the end of each module.

2. **Group Project (30% of final grade)**
   - **Objective:** Encourage collaborative learning and practical application of AI concepts.
   - **Format:** Participants will work in groups to design an AI solution for a real-world problem, followed by a presentation.
   - **Assessment:** Projects will be graded on the feasibility of the solution, depth of understanding demonstrated, and presentation skills.

3. **Final Exam (30% of final grade)**
   - **Objective:** Assess participants' overall understanding of the course content.
   - **Format:** A combination of multiple-choice, short answer, and essay questions covering all modules.
   - **Frequency:** At the end of the course.