Real-World AI Solutions for Global Challenges using Python

Course Duration: 16 hours (2 days)

Pre-requisite: Basics of Python or any programming language

Course Outcomes:

- Use neural networks and other AI techniques to estimate air quality
- Develop an AI model to make wind power generation more predictable by providing forecasts 24 hours into the future.
- Apply computer vision techniques to detect and classify animals for the purpose of biodiversity monitoring.
- Build an image classification pipeline to perform damage assessment using satellite images taken after Hurricane
- Use natural language processing techniques to analyze trends in a corpus of text messages sent in the aftermath of earth quake

Module 01: AI for Public Health

- Introduction to the basics of artificial intelligence (AI) and machine learning (ML)
- Exploration of real-world applications of AI in the AI for Good domain
- Introduction to a problem-solving framework incorporating AI solutions
- Lab: Creation of an air quality monitoring application

Module 02: AI for Climate Change

- Review of mechanisms behind anthropogenic climate change
- Examination of the impact of climate change on global temperatures and weather patterns
- Understanding AI techniques contributing to climate change mitigation
- Lab: Time series analysis for wind power forecasting
- Lab: Computer vision for biodiversity monitoring

Module 03: AI for Disaster Management

- Introduction to the four phases of the disaster management cycle: Mitigation, Preparation, Response & Recovery
- Two case studies in disaster management:
- Lab: Utilizing computer vision to analyze satellite imagery from Hurricane to identify damage in affected areas.
- Lab: Applying natural language processing techniques to explore trends in aid requests following the 2010 earthquake in Haiti.