AI and Machine Learning and SDG Monitoring

Ranjula Bali Swain
Södertörn University & CSR (SIR), Stockholm School of Economics, Sweden
AI /Machine Learning for SDGs

• AI can enable 134 of 169 SDGs across all goals, may inhibit 59

Our Objective:
• How to use AI/Machine Learning in monitoring SDGs
Lack of SDG Data

AI and Machine Learning

Artificial Intelligence:

Machine learning
Natural language processing
Expert systems
Speech
Vision
Planning
Robotics

Machine Learning

• Supervised learning – regression (forecasting, estimating, predictions etc.)
• Unsupervised Learning– Dimensionality reduction (big data visualisation, meaningful compression, feature elicitation, structure discovery etc.)
• Reinforcement learning
Theory/models

- Deep learning theory
- Probabilistic programming
- Automated machine learning

Data

- Primary data
- Secondary data
- Alternative data: Big data (the 3 Vs: volume, velocity and variety)
Limitations of using Machine Learning

• **quality**, reproducibility and **transparency**

• algorithmic bias and lack of fairness not yet captured by existing monitoring

• posterior analysis required
Using AI/Machine Learning for SDG Monitoring

- Mapping poverty with big data
- Satellite images analytics & agro meteorological monitoring
- Predict crop/annual disease etc.
- Analyze health records to identify disease trends
- Monitoring and tracking gender bias (gender inequality)
- Smarter water monitoring & management systems
- Smart grid

Track illegal fishing activities through pattern recognition
Track marine-life migration

Track stratospheric ozone depletion
Model climate change to predict disasters such as windstorms

Monitor consumption levels
Predict optimal production levels to reduce waste.

Smarter water monitoring & management systems
Track stratospheric ozone depletion
Model climate change to predict disasters such as windstorms

Monitor consumption levels
Predict optimal production levels to reduce waste.

Satellite images analytics & agro meteorological monitoring
Predict crop/annual disease etc.

Analyze health records to identify disease trends
Monitoring and tracking gender bias (gender inequality)

Smarter water monitoring & management systems
Track stratospheric ozone depletion
Model climate change to predict disasters such as windstorms

Monitor consumption levels
Predict optimal production levels to reduce waste.