RESPONSIBLE AI LESSON 1

1. **The twin transitions**

-- **Climate protection** & **Digital transformation**

-- Goal: The green and digital transitions shall reinforce each other. Digital innovation shall become one of the driving forces behind the EU’s shift to a zero-carbon economy.

1. **Global climate agreements**

* Kyoto protocol
  + - * Held in 1997 but implemented in 2005
      * Role of developed countries to mitigate GHG that is taken as a burden.
* UNFCCC (UNSC): United Nations Framework for convention on climate change
* Paris Agreement
  + - * Limit global warming to well below 2deg and prsue efforts to make it 1.5deg
      * Held in 2015 imple in 2016
* Climate Change **Mitigation** = Reducing greenhouse gas emissions
* Climate Change **Adaptation** = Developing resilience to consequences of climate change

1. **Environmental Sustainability**

* the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing, now and in the future

1. **Considering Climate Impacts of AI**

* AI can either help with mitigation of Climate Change and the adaptation to it, or it can worsen it with its energy cost
  1. *Impact Assessment Framework:*

A) Compute-Related Impacts,

B) Immediate Application Impacts,

C) System-Level Impacts.

1. **Compute-related Impacts:**

* Model development and deployment carbon output (small vs large models(more parameters which is growing day by day.))
* Computing infrastructure (cloud, data centers, local networks)
* A study by the university of Massachusetts showed that **training AI models** to do Natural Language Processing (NLP) can produce carbon dioxide around the equivalent of **5 times the lifetime emissions of the average American car.**

1. **Immediate Application Impacts**

* *Positive*: **ML models can track gas emmisions**
* *Positive*: **Forecasting of resourse production**
* *Positive*: **Improving heating/cooling system efficiency**
* Negative: ***ML can decrease the cost of oil extraction operations, decreasing the price of benzene/diesel, and increasing practically the gas emmisions***
* Negative: ***Can help cattle-farming, which by itself contributes a lot to GW***

1. **System-level impacts**

* Advertisment recommending systems (which are AI) can increase the consumption of certain products with higher or lower gas emissions