Project 4:

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**Project Proposal:** Predicting Change in Glaciers/ Sea Levels

**Project description/outline:**

For Project 4, we will be training multiple machine learning models to read historical data of glacier sizes, the speed at which glaciers are melting, or sea levels against historical data of rising CO2 levels in our atmosphere and global average temperature change in order to predict the possible future of our glaciers/ sea levels. Whichever data is more readily available, size or melt rate of the glaciers or sea level changes is what we will use to measure as we are making the assumption that they have correlation. We are interested in observing the effects of pollution on the levels of water and CO2 levels in the atmosphere are what we believe to be the most measurable variable which also will have some (assumed) correlation with the change in average global temperature.

**Research Question:**

How is the change in global average temperature affecting glacier sizes/sea levels? What changes can be predicted for the near future based on historical data?

How is the change in Carbon dioxide (CO2) in the Earth’s atmosphere affecting glacier sizes/sea levels? What changes can be predicted for the near future based on historical data?

**Resources:**

National Snow and Ice Data Center: <https://nsidc.org/data/glims/data>

EPA, US Environmental Protection Agency: <https://www.epa.gov/air-research/air-quality-and-climate-change-research#:~:text=Emissions%20of%20pollutants%20into%20the,cooling%20effects%20on%20the%20climate>

NASA Global Climate Change, Ice Sheets: <https://climate.nasa.gov/vital-signs/ice-sheets/>

NASA GCC, Sea Level: <https://climate.nasa.gov/vital-signs/sea-level/>

NASA GCC, CO2: <https://climate.nasa.gov/vital-signs/carbon-dioxide/>

<https://www.epa.gov/climate-indicators/climate-change-indicators-sea-level>

<https://www.epa.gov/climate-indicators/climate-change-indicators-glaciers>

**Repository link:** [**https://github.com/Ekenc/Project4**](https://github.com/Ekenc/Project4)

**Break Down of Tasks:**

1. Data fetching
2. Export data and merge into database
3. Cleanup of data and database
4. Input training data into selected model
   1. Forecast model, classification model, clustering model, or outlier model
   2. To compare and contrast accuracy score
5. Training parameters to control the learning algorithm
6. Create ML model
7. Create visualizations
   1. Line graph of sea levels or melt rates
   2. Line graph of global temp change and CO2
   3. Map of glaciers observing/measuring
      1. Then also size changes from predicted data possibly
   4. Heat map of global temperature changes historically and our predictions
8. Answer research question
9. Organize powerpoint presentation

**Notes from first class:**

Train on historical data

Multiple models

Compare and contrast accuracy score

Global average temps historically

If continues on a trend this is what happen

* If accelerates or decelerates this is what happen
* Pollution or CO2
* Human activity

Melt and freeze level

Temp data

What are we predicting?

Compare against multiple other models to compare against accuracy score

Which model scores better?

Sea level rise with historical glacier

Compare different algorithms

Global average Temperature

Air pollutants/human activity

Glacier size/melt rates-

sea level rising