

Capstone Project Plan

Project Questions:

- What is the relationship between severe weather events and carbon emissions in a specific region or state?
- ~~How does the frequency and severity of severe weather events affect carbon emissions from power plants and other sources? (Climatic and Storm Events Database)~~
- ~~How much carbon emissions were produced by a specific severe weather event, such as a hurricane or tornado, and how does that compare to emissions from other events? (Climatic and Storm Events Database)~~
- How does increase or decrease in storms affect overall damage caused by storms to property? To crops?
- What is the overall trend of emissions in relation to severe weather events over a certain period of time?
- What is the correlation between different fossil fuel sources and co2 emissions (differences can show how best to reduce co2 emissions at country level?)
- Which countries are highest in carbon emissions, has this changed within recent years ?
- Change in temperature over time?
- Yearly US Emissions over time? By sector?
- Can we accurately predict how damaging storms are, depending on location and length?

Project Plans:

Using Monday for Official PMP - screenshot below

Timeline/Tasks in Order:

- Initial stages
 - Data cleaning and documentation
 - tentatively by 1/21//23
- Kafka + Cloud ETL
 - Must have a Kafka Producer Stream
 - Must configure and consume topics
 - Capture the Kafka Stream in a Databrick
 - Use the Databrick to put Kafka data into an Azure Data Lake
 - Use Azure Data Factory to move data from the Azure Data Lake to Azure SQL
 - A network diagram or service diagram of data pipelines
 - Identify which services are going where
 - Identify how things are getting moved
 - Tentatively by 1/26/23
- ML
 - Build and train model
 - Tentatively by 1/29/23
- Dashboard and report
 - Building a dashboard with Dash or Power BI with Python
 - Creating napkin drawings of visualizations
 - Creating napkin drawings of a dashboard
 - Getting feedback from at least 2 other classmates in other groups on the napkin drawings

- Documenting the feedback
 - Writing the technical report
 - Writing the presentation
 - Coming up with a plan for presenting the presentation
 - Tentatively by 2/1/23
- How your team will communicate.
 - Zoom and teams chat
 - Which tasks are dependent on other tasks
 - EDA and cleaning are dependent on other tasks in general
 - Building out Kafka pipeline and ML model is needed to finish Dashboards

▼ Datasets/APIs

<input type="checkbox"/>	Task		Person	Status	Hours to Complete	Date	Comments
<input type="checkbox"/>	ETL/EDA Climate Change: Earth Surf...	+	ZB	Haven't started			
<input type="checkbox"/>	ETL/EDA Storm Events Database	+	ZB	Working on it	0		
<input type="checkbox"/>	ETL/EDA Countries CO2 Emission	+	CL S	Done	0		
<input type="checkbox"/>	+ Add Task						
					0 sum		

▼ ML

<input type="checkbox"/>	Task		Person	Status	Hours to Complete	Date	Comments
<input type="checkbox"/>	Dummy dataset	4	AN	Done			
<input type="checkbox"/>	Very smart dataset	4	AN	Working on it			
<input type="checkbox"/>	Optimization	4	AN	Haven't started			
<input type="checkbox"/>	+ Add Task						
					0 sum		

▼ Data Pipeline

<input type="checkbox"/>	Task		Person	Status	Hours to Complete	Date	Comments
<input type="checkbox"/>	Load Data From API	+	ZB	Done			
<input type="checkbox"/>	➤ Create Kafka Producer 2	+	ZB	Done			
<input type="checkbox"/>	➤ Create Kafka Consumer 2	+	ZB	Working on it			
<input type="checkbox"/>	➤ Build Data Factory Pipeline 1	+		Haven't started			
<input type="checkbox"/>	+ Add Task						
					0 sum		

▼ Dashboard

<input type="checkbox"/>	Task		Person	Status	Hours to Complete	Date	Comments
<input type="checkbox"/>	Create Napkin Drawing for Dash	+	CL S	Working on it			
<input type="checkbox"/>	Create Locally Available Dash Dashbo...	+	S	Haven't started			
<input type="checkbox"/>	Auto Update Dash Webpage	+	CL	Haven't started	0		
<input type="checkbox"/>	Embed your Machine Learning in Dash	+	CL +2	Haven't started			
<input type="checkbox"/>	Get Dashboard on the Web	+	CL S	Haven't started			
<input type="checkbox"/>	+ Add Task						
					0 sum		