**Proposal:**

**Project 3 – Alternative Fuel Stations Dashboard**

**The Story**

As climate change has pushed the center focus for zero-emission carbon, the transportation sector has responded with alternative fuel sources to wean itself off fossil fuels. But in order to that, consumers must also be willing to change their lifestyle by switching to vehicles that are non-internal combustion engines (ICE) based. One of the biggest hurdles in getting consumers to switch is a combination of alternative fuel availability and range anxiety. These two things go hand in hand as people have had the luxury of readily available fueling stations that take a relatively short time to refuel.

This proposal is to build a user interactive dashboard board to display alternative fuel stations in Florida where the user can zoom into locations and choose individual stations to learn more about them. Examples of who can benefit from this dashboard are listed below:

* Individuals that own alternative fuel vehicles looking to plan a trip
* Individuals looking to purchase or lease alternative fuel vehicles
* Businesses looking to expand their fleet vehicles
* Government planning for expanding and permitting alternative fuel stations
* Businesses involved in building the infrastructure looking for strategic locations

The types of alternative fuel stations for the public are listed as follows:

* Liquefied Natural Gas (LNG)
* Compressed Natural Gas (CNG)
* Propane (LPG)
* Ethanol (E85)
* Electric

**The Data Source**

Data will be retrieved from the National Renewable Energy Laboratory, which is a national laboratory of the U.S. Department of Energy.

URL: <https://developer.nrel.gov/docs/transportation/alt-fuel-stations-v1/all/>

**The Architecture**

The architecture of the dashboard is as follows:

* Database: Mongo DB
* HTTP Web layer: Python FLASK
* HTTP API Layer: Python FLASK

**ETL**

The ETL process will consist of the following:

* Data will be downloaded in geoJSON format and contain the raw data
* Web scraping will be used to retrieve descriptions and merged with the geoJSON data
* Unneeded fields will be removed from the dataset
* The data will be loaded into Mongo DB in geoJSON form

**User Interaction**

User interactions:

* Select station information from main map
* Search main map by zip code
* Filter the main map by fuel type
* Zoom on both maps
* Access browsing history using the Station ID drop down

**Layout**

Dashboard

