

The class was tasked to develop a project proposal that would utilize subjects covered this semester in Intro to Machine Learning. Taking into account the current interest in sustainable energy by both the U.S. government and the private sector, our team decided to explore this subject further.

The following students have collaborated and decided that their interests aligned with respect to the proposed project. Included in this list is the title, name, and contact hyperlink for each team member.

Team Lead:	David Nichols
Documentarian:	John Smith
Team Member:	Kojo Buansi
Lead Researcher:	Patrick Cur
Project Proposal Type:	Machine Learning
Project Proposal Due Date:	November 11th, 2022

Project Summary

Due to the ever-increasing call for sustainable energy and the growing social and political push toward carbon emission reduction, the team decided to explore this trend further. Specifically, and with respect to this project, the distribution, and location of new EV charging stations will be explored. Using data sets, listed in the Data Sets section at the end of this document, we will use a combination of linear regression and SVM to predict the growth of EVs over the next decade based on current and past sales trends. In addition, the load capacity of the power grid will be used to determine if the current grid will be sustainable or if minor, or drastic, improvements need to be implemented.

Project Plan

This project will be divided into multiple parts with each member being responsible for both individual and team responsibilities. First, this project requires the calculation and prediction of the U.S. power grid consumption, stability, and output over the next five to ten years. Next, current EV charging stations and power consumption will be calculated and compared to current EV sales data. Using EV sales data, future predictions will also be made. Once these two critical parts are complete, the data will be used to compare EV charging station demand and future projections with U.S. power grid capacity predictions. These will then be compared to predict if the current pace of EV growth compared to power infrastructure growth is sustainable.

To achieve this goal, the team will primarily use linear regression models for data prediction. In addition to linear regression, a combination of Naive Bayes and SVM will be explored to extrapolate the most pertinent data for our uses from the data sets.

Member Responsibilities

Kojo and Patt: These two team members will be responsible for calculating and predicting the stability and output of the U.S. power grid over the next five to ten years.

David and John: These team members will be responsible for calculating current and future EV charging station power consumption using EV sales data and trends and making future predictions.

Team: To conclude the project, the two sub-teams will combine their results to make final predictions on the U.S. power grid's sustainability.

Data Sets

Complete SEDS found [here](#)

Electric Vehicle Charging Stations generated from [here](#)

Electric Vehicle Title and Registration Activity from [here](#)