**Proyecto Final**

**Problem**

Elevated energy costs for high consumption clients and environmental awareness regarding conventional energy production are driving market alternatives to offer clients new energy sources, which could help them achieve economic savings over time. Photovoltaic (PV) Systems have become widely adopted alternatives to conventional domestic energy consumption in Mexico City in recent years. However, the process of adopting such systems often implies elevated capital costs and obscure technical terms which are not familiar to most energy consumers. Moreover, installers often have to prepare technical proposals and run costly simulations to offer clients a project which will not always be bought. While some tools have been developed to help consumers decide whether or not distributed photovoltaic systems are suitable options for them, such tools are not always available in the Mexican market. Predictive models relying on machine learning could help consumers decide whether or not they should adopt such systems, while saving installers time and effort devoted to generate technical proposals for clients who ultimately choose not to buy.

**Objectives**

1. Generate a software tool that can tell a user whether or not the customer is pre-eligible for a domestic PV system.
2. Show historical data on energy production of different PV systems in Mexico City’s metropolitan area, introducing key metrics and relevant parameters related to PV energy generation.
3. Create a machine learning model to correlate installation and weather parameters with the performance of a domestic PV system.
4. Classify PV systems based on their performance on efficient and inefficient sites using classification algorithms.

**Model assumptions**

* **Independent variables:**
* **Dependent variable: Specific yield for a given PV system (kWh/kWp)**

1. Proveer información relevante y fácil de interpretar sobre el desempeño de los paneles diario.
2. Ofrecer una calculadora de ahorro al público dependiendo del número de paneles solares y su nivel de consumo de energía.
3. Generar un modelo predictivo de la producción de un sistema fotovoltaico en función de variables climatológicas locales.

**Indicators and KPI’s**

Peak power (kWp): This is the total installed power

Specific yield (kWh/kWp): This

Technologies used

* Sklearn
* PostgreSQL
* Heroku
* Flask
* Plotly
* Pandas
* Leaflet

**Available data**

* Daily energy production from 16 solar photovoltaic sites
* Total installed capacity (kWp) of sites
* Installation properties (azimuth and tilt angles)
* Location
* Daily weather data from such sites including the following:

**Objetivos**

**Webpage**

**Landing page:**

1. **Introducton:**

