

## Title: Analyzing Global Climate Change Trends

### Objective Statement:

The main objective of this project is to analyze the global climate change trends over a period of time. The project aims to identify the significant changes and future trends. The project aims to showcase insights on how the global climate change trends are being affected over a period of time. The objective is to understand the magnitude of temperature changes and predict future trends based on historical data. The data will be retrieved from reputable datasets from popular site: Kaggle which collates global temperature records and other meteorological data. The datasets include various indicators that would be useful in modeling global climate change trends all of which would be providing a comprehensive view of global climatic changes over time. Data cleaning will be performed using the Pandas library. The process will involve handling missing values, normalizing data formats, and filtering out irrelevant information. This will ensure the integrity and quality of the data for analysis. Visualizations will be a crucial part of the analysis to illustrate the trends and patterns in the data. The following visualizations are demonstrated: A time-series plot of the global average temperature to display the trend over the years. Decade-wise and month-wise temperature trend analysis to capture long-term changes and seasonal patterns. Correlation heatmaps to understand the relationships between different climatic factors. Machine learning techniques will be used to analyze the data and make predictions. Linear Regression will be used as a baseline model to establish a relationship between time and temperature. A Random Forest Regressor will be implemented for its ability to handle non-linear relationships and interactions between variables. The models will help in predicting future climate trends and assessing the impact of various factors on global temperatures. The analysis will be documented at the end of the Jupyter notebooks, explaining my findings. The project will conclude with a discussion of the results, comparing the observed trends with established climate change models and predictions.