EAS 503

Project Pre-liminary Report

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Introduction:

Topic: Global Temperature Change Prediction.

With the global temperature timeseries dataset (1750-2013), we will predict the temperature for next 10 years i.e. 2014-2023 and compare those with the actual values. Next, we will predict and analyze the future trend in global temperature change.

Data Description:

Source: Temperature Data Climate Change - Earth Surface Temperature Data from Kaggle.

Above data contains five subsets where the data is bifurcated city wise, country wise, state wise and globally. Each subset has multiple columns containing average temperatures and average temperature uncertainties indexed in a monthly order.

Proposed Analysis:

We will use ARIMA (Auto Regressive Integrated Moving Average) model used for time series forecasting to predict the temperatures for a given city across a specified time period. Further, we will predict the temperature for next 10 years i.e. 2014-2023 and compare those with the actual values. Next, we will predict and analyze the future trend in global temperature change.

Analysis Methods to be used:

- Time Series forecasting using ARIMA model.
- Normalizing the data.
- Built-in Libraries including pandas, numpy, matplotlib, plotly, seaborn, sklearn and statsmodels.

Milestones:

Getting an inference from the predicted data about the temperature change in some of the major cities globally and identifying top 20 cities among them.

References:

Data Set: https://www.kaggle.com/datasets/berkeleyearth/climate-change-earth-surface-temperature-data
What is Time Series Forecasting: https://www.tableau.com/learn/articles/time-series-forecasting
ARIMA model: https://machinelearningmastery.com/arima-for-time-series-forecasting-with-python/