Climate Change Modeling Project

A Data Science Exploration

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About Me

- Name: Shreyash Jha
- Role: Data Scientist & Computer Science Engineer
- Institution: K.R. Mangalam University, 3rd Year
- Passion: Using data science to address global challenges like climate change

Project Overview

Objective

Analyze global temperature trends from 2000–2020 and predict temperatures for 2025 and 2030 using data science techniques.

- Explore temperature data
- Visualize warming trends
- Predict future temperatures using Linear Regression

Data Description

- **Time Period**: 2000–2020
- **Data**: Synthetic global average temperatures (in °C)
- **Source**: Simulated data (inspired by NASA/NOAA)
- **Key Insight**: Temperatures rise from 14.5°C (2000) to 16.5°C (2020)

Data Snapshot

`temperature_data.csv` contains Year and Temperature columns.

Methodology

1. **Data Preparation**: Loaded data into a Pandas DataFrame
2. **Data Cleaning**: Checked for missing values (none found)
3. **Modeling**: Used Linear Regression to model temperature trends
4. **Visualization**: Plotted data and predictions using Seaborn/Matplotlib
5. **Prediction**: Forecasted temperatures for 2025 and 2030

Results: Temperature Trends

Visualization

[Image: temperature_trend.png shows scatter plot with trend line]

- Clear upward trend in global temperatures
- Linear Regression fits data with a positive slope

Predictions for 2025 and 2030

Visualization

[Image: temperature_predictions.png shows past data, trend line, and predictions]

- Predicted Temperature for 2025: 17.5°C
- Predicted Temperature for 2030: 18.0°C
- **Insight**: Earth is warming at an alarming rate!

Why It Matters

- Climate change impacts ecosystems, wildlife, and human life
- Rising temperatures lead to extreme weather, sea level rise, and habitat loss
- Data-driven insights can guide policy and action

Call to Action

Adopt sustainable practices: recycle, save energy, plant trees!

What We Can Do

- **Individuals**: Reduce carbon footprint (e.g., bike, use public transport)
- **Communities**: Support renewable energy initiatives
- **Global**: Advocate for policies to limit emissions
- Learn more at: `https://www.earthday.org/actions-topics/climate-environment/`

Conclusion

Key Takeaways

- Global temperatures are rising steadily
- Predictions show continued warming by 2030
- We can all contribute to slowing climate change

Join the Fight!

Be a climate hero:

`https://www.worldwildlife.org/initiatives/climate`

Thank You!

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