

AI Infinity Squad: Climate change Dashboard

Team name: AI Infinity Squad

Project Title: Climate Change Dashboard

Description:

Analyze global temperature anomalies and visualize their impact on regions

Introduction:

The Climate Change Dashboard is a Python-based project that analyzes global temperature anomalies and visualizes their trends and regional impacts. It highlights the effect of climate change through statistical analysis and interactive visualizations, enabling better understanding and awareness of global warming.

project objectives:

1. Analyze global temperature anomalies over time.
2. Visualize temperature trends and their distribution.
3. Highlight the impacts of climate change on specific regions.

Data Loading...

```
# 1. Load Data
def load_data(filepath):
    """Load the global temperature anomaly data from csv."""
    try:
        data = pd.read_csv(filepath)
        print("Data loaded successfully.")
        return data
    except FileNotFoundError:
        print(f"Error: File not found at {filepath}")
        return None
```

Tools and Libraries Used

- Programming Language:
Python
- Libraries:
 - NumPy
 - Pandas
 - Matplotlib
 - Seaborn

Data Preprocessing.

```
# 2. Preprocess Data
def preprocess_data(data):
    """clean and preprocess the data."""
    # Drop missing values
    data = data.dropna()

    # Ensure data types are correct
    data['Year'] = data['Year'].astype(int)
    data['Temperature_Anomaly'] = data['Temperature_Anomaly'].astype(float)

    print("Data preprocessing complete.")
    return data
```

Analysis:

```
# 3. Analysis
def analyze_data(data):
    """Perform basic analysis on the data."""
    avg_anomaly = np.mean(data['Temperature_Anomaly'])
    max_anomaly = data['Temperature_Anomaly'].max()
    max_anomaly_year = data.loc[data['Temperature_Anomaly'].idxmax(), 'Year']

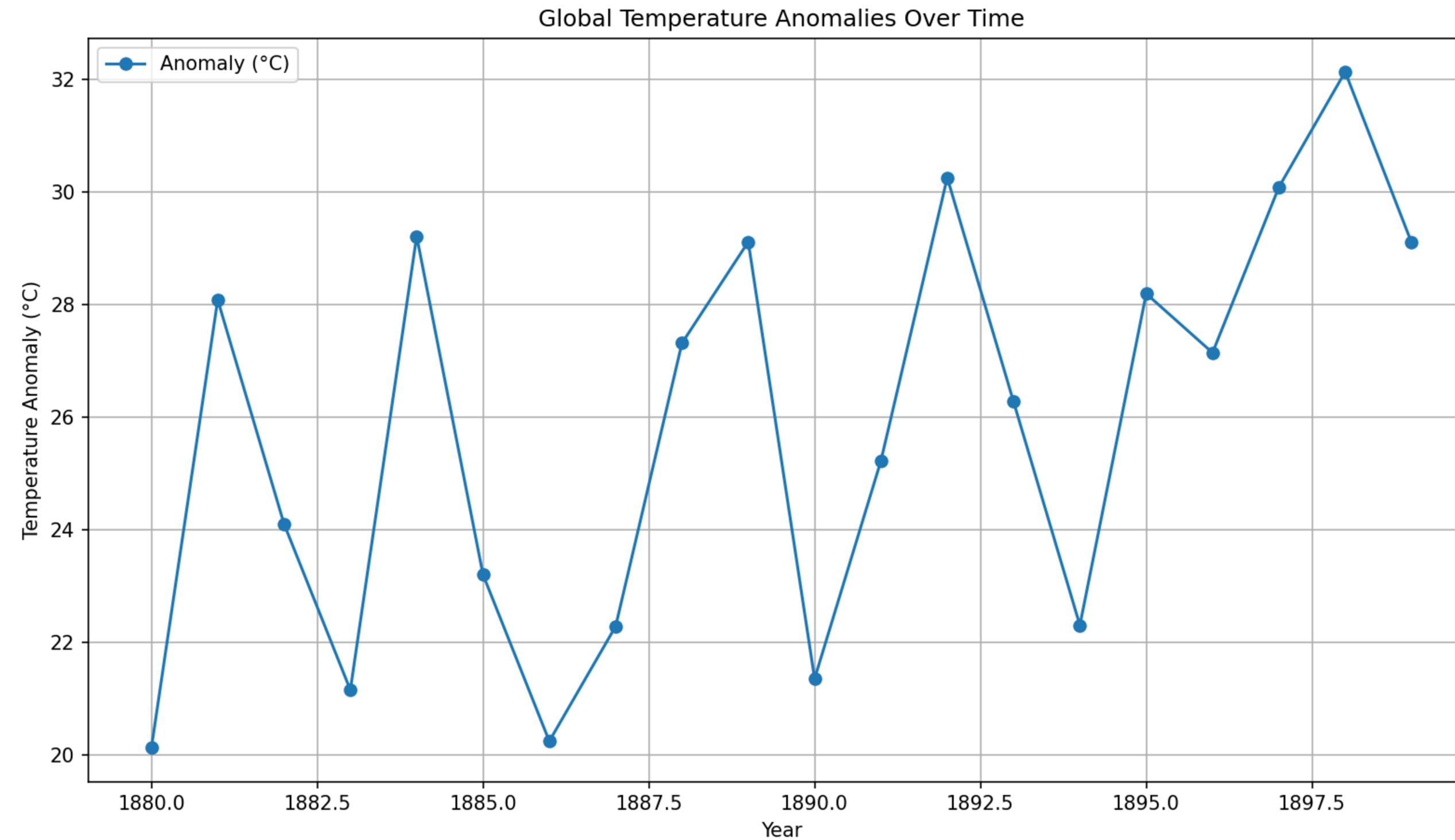
    print(f"Average Temperature Anomaly: {avg_anomaly:.2f} \u00b0C")
    print(f"Maximum Temperature Anomaly: {max_anomaly:.2f} \u00b0C in {max_anomaly_year}")

    return avg_anomaly, max_anomaly, max_anomaly_year
```

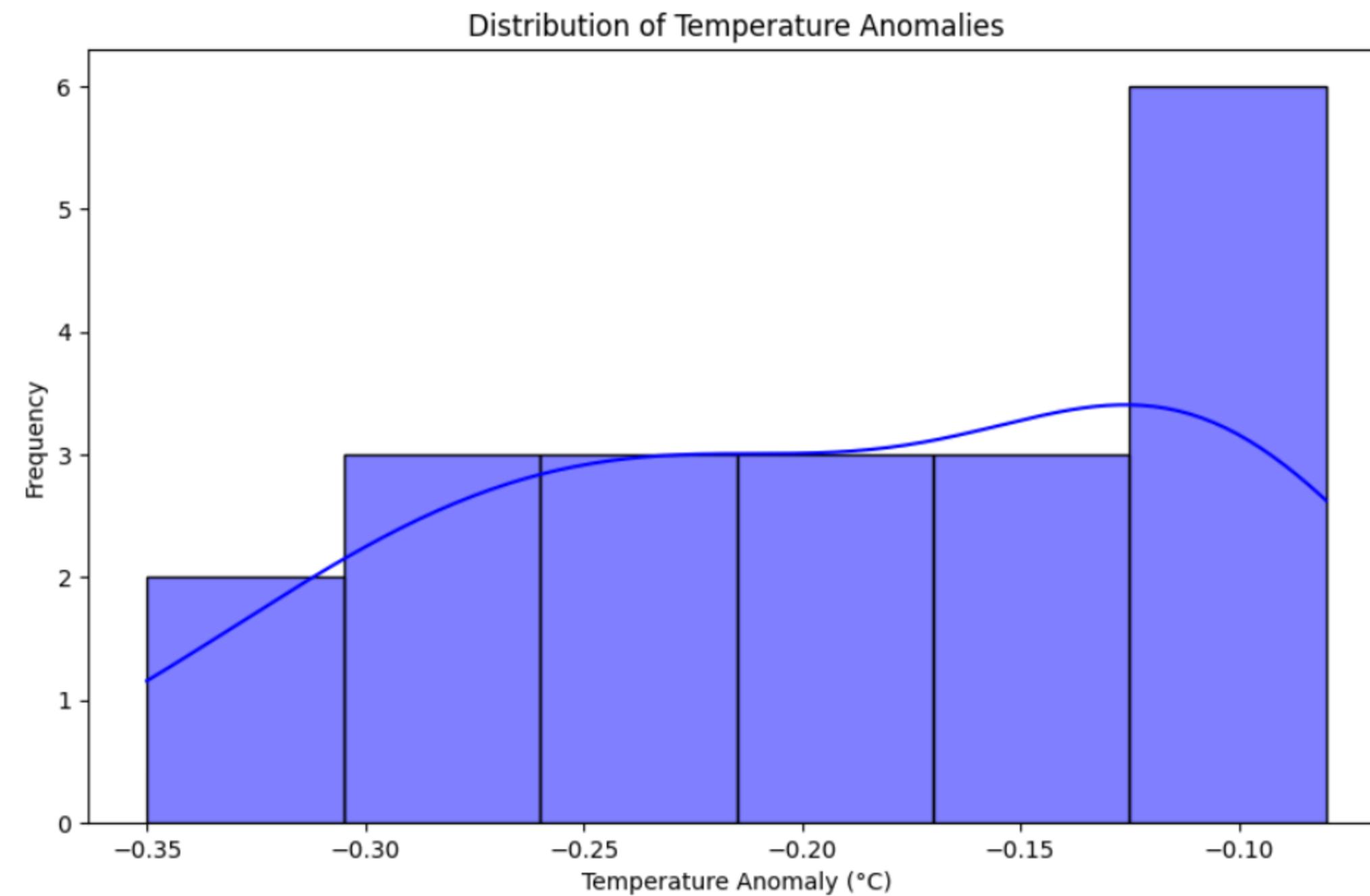
Visualization:

```
# 4. Visualization
def visualize_trends(data):
    """Generate visualizations for temperature trends."""
    # Line plot of temperature anomalies over time
    plt.figure(figsize=(10, 6))
    plt.plot(data['Year'], data['Temperature_Anomaly'], marker='o', label='Anomaly (\u00b0C)')
    plt.title('Global Temperature Anomalies Over Time')
    plt.xlabel('Year')
    plt.ylabel('Temperature Anomaly (\u00b0C)')
    plt.grid(True)
    plt.legend()
    plt.savefig(os.path.join(VISUALS_PATH, 'temp_anomalies_trend.png'))
    plt.show()
```

OUTPUT:-



Output:-



Main Execution:

```
# Main Execution
def main():
    # Load the data
    data = load_data(DATA_FILE)
    if data is None:
        return

    # Preprocess the data
    data = preprocess_data(data)

    # Analyze the data
    analyze_data(data)

    # Visualize the trends
    visualize_trends(data)

if __name__ == "__main__":
    main()
```

Thank you!!!

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