

CO2 Emissions vs Agricultural Land

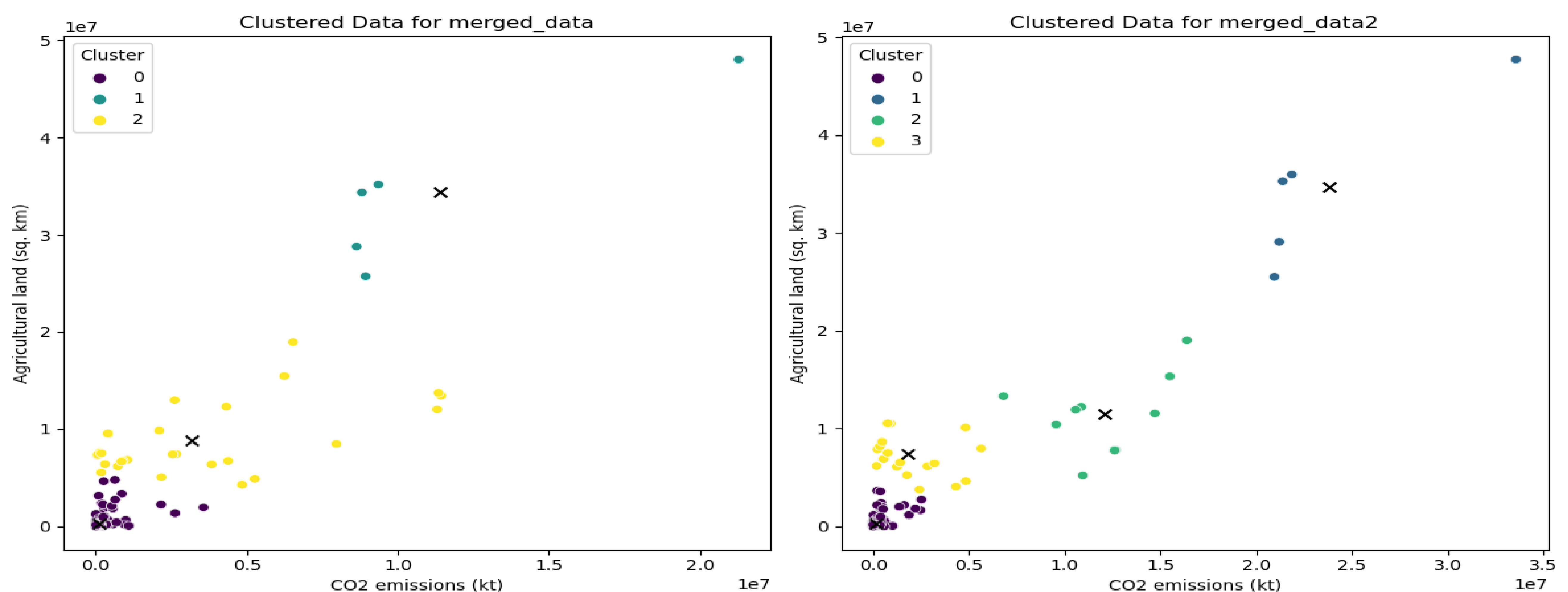
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Abstract:

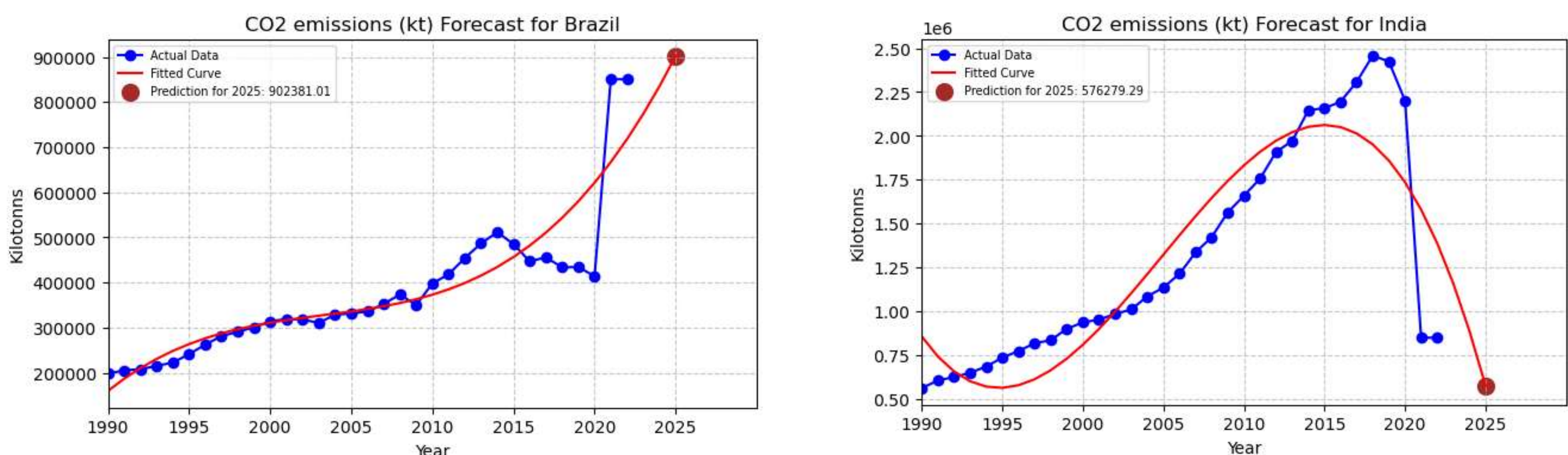
This report undertakes a holistic examination of the complex interplay between CO2 emissions and agricultural land utilization worldwide. Leveraging KMeans clustering, the study dissects countries' 1990 and 2020 data, unravelling unique patterns that reflect the interconnectedness of environmental and economic indicators. Furthermore, a forward-looking perspective is adopted by utilizing polynomial regression models to predict CO2 emissions for select countries up to 2025. The amalgamation of clustering techniques and forecasting methodologies offers a comprehensive understanding of global environmental trends, providing stakeholders, policymakers, and researchers with valuable insights for informed decision-making. This report contributes to the ongoing discourse on sustainable development and the critical balance between ecological preservation and economic growth.

Introduction:

This report explores the dynamic relationship between CO2 emissions and agricultural land use, utilizing data clustering and forecasting techniques. By analysing 1990 and 2020 data, we aim to uncover patterns in the intersection of environmental and economic indicators. The application of KMeans clustering provides insights into country categorizations, while polynomial regression models offer a glimpse into potential future trends up to 2025. This brief report serves as a snapshot of our findings, contributing to a broader understanding of the global landscape's sustainability challenges and opportunities.



The report conducts a comprehensive analysis of global environmental trends by focusing on the interplay between CO2 emissions and agricultural land use. Utilizing KMeans clustering, two datasets representing 1990 and 2020 data are categorized into optimal clusters. The clustering results are visualized through scatter plots, with each point representing a country and clusters marked by distinct colors. 'x' markers indicate the mean center of each cluster. This visualization provides insights into patterns and relationships between CO2 emissions and agricultural land characteristics. The report contributes to a nuanced understanding of the complex dynamics at the intersection of environmental sustainability and economic development.



The report delves into the forecast of CO2 emissions for Brazil and India using polynomial regression models. The data is meticulously processed, including filtering, melting, and handling missing values. A customized color palette enhances visual aesthetics, and the resulting plots showcase the historical CO2 emissions data, fitted polynomial curves, and predictions for the year 2025. By employing degree-4 polynomial models, the report provides a glimpse into potential future trends for these selected countries. This analytical approach contributes valuable insights into the anticipated environmental trajectories, aiding stakeholders, policymakers, and researchers in making informed decisions for sustainable development.

GitHub Link :
Data Set Link :