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Weathering the Forecast: Using Data Mining Techniques to Investigate Temperature Effect on Ice Cream Sales

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Abstract

This paper explores the predictive power of data mining for ice cream sales, emphasizing the critical role that temperature plays in determining market patterns. The study investigates the intricate relationship between weather and consumer behavior, which is essential for adjusting to temperature variations brought on by climate change, using linear regression and XGBoost algorithms. Although the XGBoost model shows slightly better performance in specific metrics, the Linear model exhibits greater stability under extreme conditions. The temperature-sales relationship is frequently ignored by traditional forecasting techniques, which results in inefficient supply chains. This research offers a trustworthy predictive model to improve decision-making across sectors by utilizing data mining. Driven by the potential for data mining to optimize company processes, the study emphasizes advantages such as enhanced production scheduling and focused marketing approaches. The complete insights provided by the empirical results from both mod els help stakeholders make informed decisions on the influence of temperature on sales. Although the study acknowledges its limits in terms of breadth and data availability, it also proposes future research directions that could involve more variables and sophisticated approaches. Finally, by elucidating the complex relationship between ice cream sales and the weather, this thesis enhances predictive analytics and provides useful insights for companies operating in data-driven contexts.

Keywords
Datasets, Neural Networks, Gaze Detection, Text Tagging.

Introduction
In today's data-driven environment, data mining has become an indispensable tool, enabling businesses to extract valuable insights from extensive datasets. Data mining techniques play a pivotal role in predictive analytics, particularly in forecasting various phenomena, with a special focus on market sales. This study endeavors to apply