Paper title:
Big Data Analytics and Mining for Effective Visualization and Trends Forecasting of Crime Data
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1.Summery:
1.1 Motivation:
By applying Big Data Analytic(BDA) to criminal data, researchers discovered patterns and improved prediction accuracy for crime trends. As urbanization and population growth accelerate, cities face the challenge of increasing crime rates. Traditional methods struggle to analyze the large, diverse datasets generated by crime activity. This paper proposes Big Data Analytics (BDA) as a potential solution for understanding and predicting crime patterns and trends. Leveraging the capabilities of data mining, the study aims to identify hidden patterns and extract valuable insights from crime data.
1.2 Contribution:
The authors present a novel visual representation for exploring crime data, enabling users to compare and analyze trends across different locations and timeframes. Additionally, they compare and contrast various machine learning models to optimize crime prediction. This research contributes significantly to the field of crime analysis by providing a comprehensive framework for utilizing BDA and data mining techniques to improve public safety and prevent crime.
1.3 Methodology:
The researchers collected crime data from three US cities, preprocessed it, visualized it, and employed three models to analyze and predict crime trends. They evaluated the models and discussed their implications for crime prevention and management. To analyze crime trends, the paper compares the Prophet model for seasonality, a neural network for non-linearity, and an LSTM for long-term dependencies.This paper analyzed crime data in three US cities using big data analytics and visualization, and found that the Prophet and LSTM models outperformed neural network models.
1.4 Conclusion: The study's focus on limited geographic scope and narrow model comparison, coupled with the absence of concrete real-world implementation strategies and causal analysis, hinders the paper's ability to fully realize its potential impact. Addressing these limitations through comprehensive research and actionable insights would elevate the study's significance and practical application.
2.Limitations:
2.1 First Limitation:
While the study demonstrates the effectiveness of BDA for crime prediction, its limited scope to three US cities restricts the generalizability of the findings to other geographic locations and diverse crime patterns. Expanding the analysis to a broader range of cities would enhance the study's impact and applicability.
2.2 Second Limitation:
Although the study identifies promising BDA models for crime prediction, it lacks concrete strategies for real-world implementation. To maximize its impact, future research should

focus on translating these models into practical tools and applications that can be readily adopted by law enforcement agencies for effective crime prevention and resource allocation.

3.Synthesis:

Big Data Analytics (BDA) can extract valuable insights from crime data, enabling law enforcement agencies to better understand patterns, predict crime trends, and allocate resources effectively. Studies have shown that Prophet and LSTM models outperform traditional neural networks for crime prediction. However, further research is needed to expand the scope of analysis and develop practical implementation strategies.