Exploring the Role of Data Mining in Crime Classification: A Systematic Literature Review

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Abstract : This in-depth exploration, through a systematic literature review, scrutinizes the nuanced role of data mining in the classification of criminal activities. The research focuses on investigating various methodological aspects and recent developments in leveraging data mining techniques to enhance the effectiveness and precision of crime categorization. Commencing with an exposition of the foundational concepts of crime classification and its evolutionary dynamics, this study details the paradigm shift from conventional methods towards approaches supported by data mining, addressing the challenges and complexities inherent in the modern crime landscape. Specifically, the research delves into various data mining techniques, including K-means clustering, Naïve Bayes, K-nearest neighbour, and clustering methods. A comprehensive review of the strengths and limitations of each technique provides insights into their respective contributions to improving crime classification models. The integration of diverse data sources takes centre stage in this research. A detailed analysis explores how the amalgamation of structured data (such as criminal records) and unstructured data (such as social media) can offer a holistic understanding of crime, enriching classification models with more profound insights. Furthermore, the study explores the temporal implications in crime classification, emphasizing the significance of considering temporal factors to comprehend long-term trends and seasonality. The availability of real-time data is also elucidated as a crucial element in enhancing responsiveness and accuracy in crime classification.