

Universiti Teknologi MARA

**Prediction of COVID-19 Outbreak Using
Support Vector Machine**

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ABSTRACT

In response to the unprecedented challenges posed by the COVID-19 pandemic, this research project presents a systematic approach to outbreak prediction, specifically advocating for the implementation of Support Vector Machine (SVM) algorithms. The methodology integrates a thorough literature review, meticulous data collection from reliable sources, and rigorous data pre-processing to ensure the dataset's quality and relevance. A prototype architecture and a user-friendly graphical interface tailored for SVM-based outbreak predictions are developed, accompanied by detailed code snippets elucidating essential steps in data loading, encoding, scaling, and SVM model training. Evaluation metrics, including a comprehensive analysis of the confusion matrix, highlight the consistent superiority of the SVM model with the sigmoid kernel across various training/testing split ratios. This research significantly contributes to the understanding of machine learning applications in the context of COVID-19 outbreak prediction, emphasizing the importance of algorithm and configuration selections for robust forecasting. The ultimate goal is to provide actionable insights for governments, businesses, and healthcare authorities, enhancing their preparedness and resilience in the face of current and potential future pandemics. Looking ahead, future works may explore refining the SVM model and incorporating additional features for improved accuracy, and the ongoing iterative process involves continuous validation and adaptation of the model to evolving data patterns and emerging challenges in pandemic management. This research process serves as a blueprint for developing advanced technical solutions that aid authorities and healthcare professionals in optimal resource management during emergency situations.

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