

**UNIVERSITI TEKNOLOGI MARA**

**OPTIMIZING IN-CAR-ABANDONED  
CHILDREN'S SOUNDS DETECTION MODEL  
USING DEEP LEARNING ALGORITHMS**

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**BACHELORS IN SURVEYING SCIENCE AND  
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**UNIVERSITI TEKNOLOGI MARA**

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Thesis submitted in fulfilment  
of the requirements for the degree of  
**Bachelors in Surveying Science and Geomatics (Honours)**

**College of Built Environment, CBE.**

## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Under - Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## **ABSTRACT**

Children abandoned in vehicles is a critical issue that has led to numerous fatal injuries worldwide. To address this problem, an optimized in-car-abandoned children's sounds detection model using deep learning algorithms is proposed. The objective of this study is to develop an accurate and efficient model capable of recognizing the presence of children in cars based on sound data. In this research, two machine learning models, Deep Neural Network (DNN) and Support Vector Machine (SVM), are utilized for sound classification. Both models' parameters are optimized to achieve optimal performance. The results demonstrate the effectiveness of the proposed deep neural network, achieving an impressive classification accuracy of 99%, outperforming the SVM model which achieved an accuracy of 98%. The optimized models have the potential to significantly reduce the number of abandoned children in cars cases, contributing to enhanced safety measures. The significance of this study lies in its potential to offer a viable solution to address the problem of children abandoned in vehicles. By proposing an alternative method to detect in-car-abandoned children's sounds with high accuracy, this research can assist authorities, including the Ministry of Transportation, in implementing effective measures to mitigate the risks associated with this pressing issue. Ultimately, the successful implementation of this model can lead to a substantial reduction in child abandonment cases and promote safer transportation practices for children.

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