

UNIVERSITI TEKNOLOGI MARA

**SOIL CONTAMINATION CLASSIFICATION
BASED ON GROUND PENETRATING RADAR
DATA USING SUPPORT VECTOR MACHINE**

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Dissertation submitted in partial fulfillment
of the requirements for the degree of

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AUTHOR'S DECLARATION

I declare that the work in this dissertation 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 Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


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ABSTRACT

Many of natural sources had been polluted such as water, air, sound and soil (mineral). This research is for making the classification of soil contamination with uncontaminated soil for sand and laterite type of soil. The contamination will be use is formed by hydrocarbon compound which was diesel. This research will be conducted at test bed of GPR scanning in UiTM Perlis. After the data of contaminated and uncontaminated soil are collected, the raw data need to process using Reflexw. The preprocessing of data radargram consists of move starttime, dynamic correction, and hyperbola fitting. GPR data interpretation can be use for classify the buried feature by using machine learning. In this research the classification method that will be using Support Vector Machine (SVM) classifier. The open source provided SVM function is Waikato Environment for Knowledge Analysis (Weka). The SVM classification provided a good quality of classification. All of three soil type classification produce correct instances classified above than 95%. This classification also had been compared with logistic regression classification. The root mean square of these classification provided good result all of them were below 0.05.

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