



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

Project Proposal Form MCST1043
Sem: 2 Session: 2024/25

SECTION A: Project Information.

Program Name: **Masters of Science (Data Science)**

Subject Name: **Project 1 (MCST1043)**

Student Name: Zhao Zhihan

Metric Number: MCS241041

Student Email & Phone: zzh85642256@gmail.com

Project Title: Research on Soil Environmental and Health Risk Analysis Based on Machine Learning

Supervisor 1: _____

Supervisor 2 / Industry
Advisor(if any): _____

SECTION B: Project Proposal

Introduction:

This project mainly utilizes robot learning methods to analyze soil pollution data and data on the health levels of people around. It explores the intrinsic connection between soil pollution and human health hazards. The analyzed data set includes data on pollutant types and concentrations, weather conditions, the number of patients with diseases, and disease reports, etc. Ultimately, it enables people to more effectively assess and manage soil pollution.

Problem Background:

In recent years, with the rapid development of global industry and agriculture, the problem of soil pollution has become increasingly serious. Pollutants not only contaminate the nearby soil but also spread to other areas due to factors such as rainfall. These pollutants not only affect crop growth but also enter the human body through agricultural products, causing serious harm. Therefore, the use of machine learning for the supervision and assessment of soil pollution can help improve the health of the public.

Problem Statement:

The main research issues include:

- 1 The data types are diverse. How to integrate various types of data?
2. How to eliminate the influence of other factors on the decline of human health levels?

3. How to utilize machine learning to achieve the supervision and assessment of soil?

Aim of the Project:

This project employs machine learning methods to analyze soil pollution data and human health data. The aim is to identify the impacts of soil pollution and other weather and climate factors on human health. Moreover, it is intended to provide more reliable scientific basis for the assessment of soil pollution supervision.

Objectives of the Project:

The research objectives are:

- Pollutant types and concentrations in soil.
- Soil and weather conditions.
- Agricultural practices and nearby industry presence.
- Reported disease types, severity, and symptoms.
- Affected demographic segments.
- Mitigation measures and case resolutions.

Scopes of the Project:

The data of this project includes:

- Environmental data: soil pollutant concentrations, soil types, weather conditions.
- Industrial and agricultural data: types of industries and agriculture, industry distribution.
- Health data: disease types, severity, symptoms and health reports.
- Demographics: gender, age, etc. of the affected population.

Expected Contribution of the Project:

Use machine - learning methods to build models, make full use of various types of data to identify the impacts of factors such as soil pollution and climate on human health, and construct a supervision and evaluation system. Provide a reliable scientific basis for people in different regions to supervise and prevent soil pollution. While promoting industrial and agricultural development, offer an effective soil protection plan, thereby reducing the harm of soil pollution to humans.

Project Requirements:

| | |
|------------------------|---|
| Software: | Python ,R, GIS, |
| Hardware: | High-performance computers, |
| Technology/Technique/ | Data Collection and Integration,Machine Learning Modeling |
| Methodology/Algorithm: | Model Evaluation and Validation |

Type of Project (Focusing on Data Science):

- ☒ Data Preparation and Modeling
- ☒ Data Analysis and Visualization
- ☐ Business Intelligence and Analytics

- ☒ Machine Learning and Prediction
- ☐ Data Science Application in Business Domain

Status of Project:

- ☒ New
- ☐ Continued

If continued, what is the previous title? _____

SECTION C: Declaration

I declare that this project is proposed by:

- ☐ Myself
- ☐ Supervisor/Industry Advisor (_____)

Student Name: Zhao zhihan

Signature

Date

SECTION D: Supervisor Acknowledgement

The Supervisor(s) shall complete this section.

I/We agree to become the supervisor(s) for this student under aforesaid proposed title.

Name of Supervisor 1: _____

Signature

Date

Name of Supervisor 2 (if any): _____

Signature

Date

SECTION E: Evaluation Panel Approval

The Evaluator(s) shall complete this section.

Result:

- ☐ FULL APPROVAL ☐ CONDITIONAL APPROVAL (Major)*
- ☐ CONDITIONAL APPROVAL (Minor) ☐ FAIL*

* Student has to submit new proposal form considering the evaluators' comments.

Comments:

Name of Evaluator 1:

Signature

Date

Name of Evaluator 2:

Signature

Date