

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:

- 1The 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:

Project Requirements:

The data of this project includes:

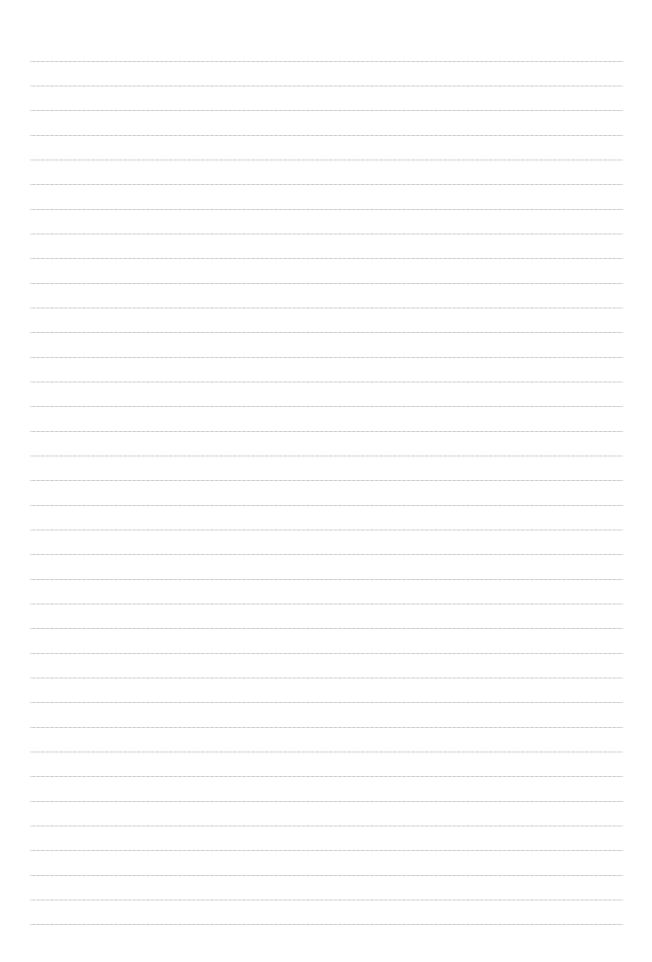
- Environmental data: soil pollutant concentrations, soil types, weather conditions.
- Industrial and agricultural data: types of industries and agriculture, industry distribution.
- Health data: disease types, severity, symptoms and health reports.
- Demographics: gender, age, etc. of the affected population.

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.

roject 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 (Focusi	ng on Data Science):
[√]1	Data Preparation and Modeling
[√]	Data Analysis and Visualization
[]	Business Intelligence and Analytics

[-	√] Machine	e Learning and Predict	ion
]] Data Sci	ience Application in B	Business Domain
Status of Project	::		
]	√] New		
[] Continu	ed	
If continued, who			
SECTION C:	Declaratio	on	
I declare that thi	is project is pr	oposed by:	
	Myself		
[]	Supervisor/In	idustry Advisor ()
Student Name:	Zhao zhihan		
	Signature		Date
SECTION D:	Superviso	r Acknowledgem	ent
The Supervisor(s) s			
I/We agree to be	come the supe	rvisor(s) for this stud	lent under aforesaid proposed title.
Ü	•	,	
Name of Supervis	sor 1:		
		Signature	Date
Name of Supervis	sor 2 (if any):		
		Signature	Date
-		n Panel Approva	<u>l</u>
The Evaluator(s) sh	all complete this	section.	
	ONAL APPROV	VAL (Minor) Il form considering the ev	[] CONDITIONAL APPROVAL (Major)* [] FAIL* valuators' comments.
Comments:			



Name of Evaluator 1:			
	Signature	Date	
Name of Evaluator 2:			
	Signature	Date	