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: WANG TONG

Metric Number: MCS241052

Student Email & Phone: tong20@graduate.utm.my +601114182936

Project Title: The prediction and analysis of typhoon landing points by employing random forest regression

Supervisor 1:

Supervisor 2 / Industry Advisor(if any):

SECTION B: Project Proposal

Introduction:

Employ random forest regression to conduct the prediction and analysis of the landing points of typhoons in the waters around Malaysia, and investigate the extent of influence of various environmental factors on typhoons. This is to enable better typhoon prediction and disaster emergency response assistance for relevant departments in the future.

Problem Background:

Malaysia is located in the tropical region of Southeast Asia, bordering the Strait of Malacca to the west and the South China Sea to the east. Although Malaysia is not a country frequently hit by typhoons formed in the South China Sea or the remnants of typhoons moving northward from the East China Sea, causing strong winds, heavy rain, and floods.

For example:

In 2021, Tropical Depression Haitang brought continuous heavy rain to Johor, forcing the evacuation of tens of thousands of people.

Accurate predictions of typhoon landfall points are crucial for Malaysia's disaster warning systems， coastal infrastructure protection, and evacuation plans.

Problem Statement:

Aim of the Project:

1、Construct a predictive model: Employ the Random Forest Regression algorithm to predict the potential typhoon landing points (latitude and longitude coordinates) that might affect Malaysia in the forthcoming period.

2、Identify crucial elements: Analyze the contribution degree of various environmental variables to the path prediction, and be ready to adopt principal component analysis for the analysis.

Objectives of the Project:

Scopes of the Project:

1、Search for the typhoon dataset (from 2000 to the present) to seek typhoons that passed by the vicinity of the waters of Malaysia and their corresponding data.

2、Search for the dataset of various environmental factors that affect the path of typhoons.

Expected Contribution of the Project:

Develop typhoon prediction tools suitable for the waters of Malaysia to assist relevant departments in optimizing emergency response.

Project Requirements:

Software: .....

Hardware: .....

Technology/Technique/ Methodology/Algorithm: .....

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: .....

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 (Minor)

[ ] CONDITIONAL APPROVAL (Major)*

[ ] 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**