

## **Rainfall prediction using normal equation approach and multiple linear regressions**

### **ABSTRACT**

Weather prediction is a scientific and technology application that predicts the weather condition of the atmosphere at a certain area. Numerous weather prediction models have emerged as a result of the expanding research in the disciplines of artificial intelligence and machine learning. Rainfall is a crucial component of the weather system that has direct effects on agriculture, fisheries, tourism, the design of urban drainage systems, and land management systems. The objective of this project is to develop a multivariate linear regression model to predict rainfall in Kota Kinabalu. Meteorological variables that are used in this work are temperature, dew point, relative humidity, wind speed, atmospheric pressure and sea level pressure. The weather information was collected from the Weather Underground website, which compiles meteorological information from local weather stations. The model, which employs two optimization approaches, the normal equation approach and gradient descent approach, was developed using Matlab code. The efficiency of the model was determined by comparing the average value of the root mean square error of the test data. The results revealed that the normal equation approach predicts the weather with high accuracy, but the gradient descent technique predicts the weather with poor accuracy.