

UNIVERSITI TEKNOLOGI MARA

**WEATHER PREDICTION IN
MALAYSIA USING
ARTIFICIAL NEURAL
NETWORK (ANN)**

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ABSTRACT

Forecasting is considered one of the most imperative and perplex proceedings in the present-day. Weather forecasting is a natural process which entails the prediction of the change in the atmospheric conditions with the passage of time. Weather forecasting has always been a challenging task. In several cases, scientists and researchers had attempted in establishing a linear association between the input and targeted data of the weather. Since, weather is non-linear and dynamic in nature, the target has shifted to prediction of non-linear weather data. Though weather prediction is relatively a statistical measure and is automated, with the traditional tools, its result is rather uncertain and not always accurate. Due to its non-linearity and complex process, the best approach for resolving such problems is with the use of Artificial Neural Network (ANN). This project utilizes a modified waterfall model as its chosen methodology. The modified waterfall model comprises four key phases: requirement analysis, design, development, and testing. In this project, data from OpenWeatherMap was employed as a valuable resource. OpenWeatherMap gives current weather data at a specific location, including temperature, humidity, wind speed, atmospheric pressure, and weather description. Latitude, longitude, and other geographical details are available to help accurately pinpoint specific locations on the Earth's surface. Training was conducted by doing data preparation, data collection, data preprocessing like data cleaning, feature selection, time series handling, and train-test split. Testing was conducted by doing functionality testing. From the functionality testing, results achieved are the web system operates smoothly and performs its intended task accurately. Hence, all the project objectives have been achieved but this weather prediction still have some limitations like the weather prediction cannot predict for seven days only for 3 days. Future recommendations to improve this project are extend forecasting horizon, enhance severe weather prediction, and expand coverage in remote areas by work in conjunction with local governments and communities to set up additional weather monitoring stations.

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