

“PREDICTION OF DAILY REFERENCE EVAPOTRANSPIRATION USING MACHINE LEARNING MODEL”

PROJECT REPORT

Submitted in partial fulfilment of the requirements for the award of

Bachelor of Engineering

in

Computer Science and Engineering

Submitted to

Visvesvaraya Technological University

Belagavi, Karnataka, 590 014



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CERTIFICATE

Certified that the major project work entitled “**Prediction of Daily Reference Evapotranspiration Using Machine Learning Model**” is a bonafide work carried out by **Ms. Pooja Wadekar (2KE20CS052), Ms. Pooja Belgaumkar (2KE20CS054), Ms. Vaishnavi Dubey (2KE20CS113) and Mr. K D Sandeep (2KE20CS121)** in partial fulfilment for the award of degree of **Bachelor of Engineering in VIII Semester, Computer Science and Engineering of Visvesvaraya Technological University, Belagavi**, during the year **2023-24**. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The major project report has been approved as it satisfies the academic requirements in respect of major project work prescribed for the said degree.

Guide

HOD

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CERTIFICATE FROM THE GUIDE

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To the best of my / our knowledge and belief,

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- (iii) The work is up to the desire standard both in technical content and the write up.
- (iv) Plagiarism percentage is 13%.

Date:

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Guide

The project work as mentioned above is hereby recommended and forwarded for Examination and evaluation.

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DECLARATION

We, **Ms. Pooja Anil Wadekar (2KE20CS052), Ms. Pooja P Belgaumkar (2KE20CS054), Ms. Vaishnavi Dubey (2KE20CS113) and Mr. K D Sandeep (2KE20CS121)**, students of VIII Semester B.E., K.L.E. Institute of Technology, Hubballi, hereby declare that the project work has been carried out by us and submitted in partial fulfillment of the requirements for the VIII Semester degree of **Bachelor of Engineering in Computer Science Engineering** of Visvesvaraya Technological University, Belagavi during academic year 2023-2024.

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ABSTRACT

This project aims to develop a machine learning-based model for accurate estimation and prediction of evapotranspiration, a critical component of the water cycle. Evapotranspiration plays a pivotal role in water resource management, agricultural planning, and ecological studies. Traditional methods for estimating evapotranspiration often rely on complex physical models, which may have limitations in capturing the intricate relationships within the data. In this study, we explore the application of machine learning techniques, with a specific focus on the K-Nearest Neighbors (KNN) algorithm, to enhance the accuracy and efficiency of evapotranspiration predictions. The project involves the collection and preprocessing of comprehensive datasets, incorporating meteorological variables, soil moisture content, and historical evapotranspiration measurements.

The potential applications of the developed machine learning model include water resource management, precision agriculture, and climate change impact assessment. The model's ability to provide real-time evapotranspiration estimates can aid decision-makers in optimizing irrigation schedules, predicting drought conditions, and making informed land use planning decisions. This project contributes to the growing body of research on the integration of machine learning in hydrological studies, providing a data-driven approach to understanding and predicting evapotranspiration dynamics. The findings of this research have practical implications for sustainable water management practices and environmental conservation efforts.

Keywords: Evapotranspiration, Machine Learning, K-Nearest Neighbors, Artificial Neural Networks, Long Short-Term Memory, Hydrological Modeling, Agricultural Planning, Climate Modeling, Predictive Accuracy, Computational Efficiency.

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