**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**JNANASANGAMA, BELAGAVI-590018**



**TECHNICAL SEMINAR REPORT**

**“Paper quality enhancement and model predictions using machine learning techniques”**

**Submitted in Partial fulfilment of the Requirements for the VIII Semester of the Degree of**

**BACHELOR OF ENGINEERING**

**in**

**Information Science and Engineering**

*Submitted by*

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Under the Guidance of

**Internal Guide**

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**2022-2023**



**DEPT. OF INFORMATION SCIENCE & ENGINEERING**

***Certificate***

This is to certify that **Pranjali S (1CR19IS107),** student of CMR Institute of Technology have undergone Technical Seminar in partial fulfilment for the award of **Bachelor of Engineering** in **Information Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year **2022-2023**. It is certified that all corrections/suggestions indicated for Initial reviews have been incorporated in the Report. This **Technical Seminar Report** has been approved as it satisfies the academic requirements in respect of project work prescribed for the said degree.

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| **-----------------------------** |  | **------------------------** | |
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**PRANJALI S**

i  **(1CR19IS107)**



**DECLARATION**

I, **Pranjali S**, bearing **1CR19IS107,** student of eight semester B.E in Information Science and Engineering from CMR Institute of Technology, Bangalore, hereby declare that this TECHNICAL SEMINAR titled “**Paper Quality Enhancement And Model Prediction Using ML Techniques”** was carried out by me.

I have done the work assigned to me during the period and all the contents about work assigned are prepared and presented by me. The eight semester **Technical Seminar** has been done by me under the supervision of **Dr. Srividya R**,Department of ISE, Internal Guide, CMR Institute of Technology, Bangalore.

This work is submitted to Visvesvaraya Technological University in partial fulfilment of the requirement for the award of degree of Bachelor of Engineering of Technology in Information Science and Engineering during the academic year 2022-2023.

Place: Bangalore

**PRANJALI S**

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**ABSTRACT**

A machine learning approach demonstrated in the proposed study predicts the parameters involved in paper quality enhancement in real time. To control the steam pressure during paper manufacture, machine learning algorithms have been used to model different parameters such as moisture, caliper, and weight (grammage). The training and testing data sets were obtained to develop several machine learning models through several data from the parameters of the paper-making process. The inputs considered were moisture, weight, and grammage. As a result, the developed model showed better results by showing less execution time, fewer error values such as root mean squared error, mean squared error, mean absolute error, and R squared score. In addition, modeling was carried out based on model interpretation and cross-validation results, showing that the developed model could be a more useful tool in predicting the performance of the steam pressure and input parameters in the paper-making process. A comparison of results shows that the k-Nearest Neighbor algorithm outperforms the other machine learning techniques. Machine learning is also used to predict the efficiency of steam pressure reduction.

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