

# Visvesvaraya Technological University

Jnana Sangama, Belagavi - 590018



**A PROJECT WORK (21AIP76)**

**Report on**

**“CYBERBULLYING DETECTION SYSTEM USING  
ADVANCE NLP AND ML TECHNIQUES”**

*Project Report submitted in partial fulfilment of the requirement for the*

*award of the degree of*

**BACHELOR OF ENGINEERING**

**IN**

**ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

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**2024 - 2025**

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### CERTIFICATE

Certified that the **Project Work (21AIP76)** entitled **“CYBERBULLYING DETECTION SYSTEM USING ADVANCE NLP AND ML TECHNIQUES”** is a bonafide work carried out by:

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in partial fulfilment for VIII semester B.E Project Work in the branch of Artificial Intelligence & Machine Learning prescribed by **Visvesvaraya Technological University, Belagavi** during the period of 2024-2025 Academic Year. It is certified that all the corrections and suggestions indicated for internal assessment have been incorporated in the report deposited in the department. The Project Report has been approved as it satisfies the academic requirements in report of project work prescribed for the Bachelor of Engineering degree.

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## DECLARATION

We, the undersigned students of 8<sup>th</sup> semester, department of Artificial Intelligence & Machine Learning, KSIT, declare that our Project Work **“CYBERBULLYING DETECTION SYSTEM USING ADVANCE NLP AND ML TECHNIQUES”**, is a bonafide work of ours. Our project is neither a copy nor by means modification of any other engineering project.

We also declare that this project was not entitled for submission to any other university in the past and shall remain the only submission made and will not be submitted by us to any other university in the future.

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## **ABSTRACT**

Cyberbullying is a growing concern in the digital age, affecting individuals across social media platforms, messaging services, and online communities. This project presents a robust system for detecting cyberbullying using advanced Natural Language Processing (NLP) and Machine Learning (ML) techniques. The system aims to automatically classify text-based user content as cyberbullying or non-cyberbullying, enabling timely intervention and safer online interactions.

We implemented a multi-stage pipeline involving data preprocessing, text vectorization using TF-IDF and word embeddings, and classification using supervised learning models such as Logistic Regression, Random Forest, and advanced deep learning models. The system was trained and evaluated on publicly available labeled datasets with metrics like precision, recall, F1-score, and accuracy.

NLP techniques such as lemmatization, stop-word removal, and tokenization were used to normalize and structure the textual data. Additionally, performance benchmarking was conducted on both CPU and GPU environments to assess scalability.

The proposed solution demonstrates high accuracy in detecting harmful language and provides a foundation for integration into social platforms and moderation tools. This work contributes to the broader goal of promoting digital well-being through intelligent, automated moderation.

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