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

Submitted by

G VINAY KUMAR	**1KS21AI016**
HARSHITHA A	**1KS21AI018**
LOKARANJAN B S	**1KS21AI027**
SAI NEHA D P	**1KS21AI043**

Under the guidance of

Lakshmi K K

Assistant professor

Department of Artificial Intelligence & Machine Learning

K.S.I.T, Bengaluru-560109

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

K. S. INSTITUTE OF TECHNOLOGY

#14, Raghuvanahalli, Kanakapura Road, Bengaluru – 560109

2024 - 2025

K. S. INSTITUTE OF TECHNOLOGY

#14, Raghuvanahalli, Kanakapura Road, Bengaluru - 560109

Department of Artificial Intelligence & Machine Learning

CERTIFICATE

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

G VINAY KUMAR	**1KS21AI016**
HARSHITHA A	**1KS21AI018**
LOKARANJAN B S	**1KS21AI027**
SAI NEHA D P	**1KS21AI043**

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 Bachelorof Engineering degree.

.....	.....	.....
Signature of the Guide	**Signature of the HOD**	**Signature of the Principal**
[Lakshmi K K]	[Dr. Suresh M B]	[Dr. Dilip Kumar K]

External Viva

Name of The Examiners	**Signature with Date**
1.....	**.....**
2.....	**.....**

DECLARATION

We, the undersigned students of 8th 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.

Place: Bengaluru
Date:

Name and USN	**Signature**
G VINAY KUMAR(1KS21AI016)	**……**
HARSHITHA A(1KS21AI018)	**……**
LOKARANJAN B S(1KS21AI027)	**……**
SAI NEHA D P (IKS21AI043)	**……**

ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task will be incomplete without the mention of the individuals, we are greatly indebted to, who through guidance and providing facilities have served as a beacon of light and crowned our efforts with success.

First and foremost, our sincere prayer goes to almighty, whose grace made us realize our objective and conceive this project. We take pleasure in expressing our profound sense of gratitude to our parents for helping us complete our Project Work successfully.

We take this opportunity to express our sincere gratitude to our college **K.S. Institute of Technology,** Bengaluru for providing the environment to work on our project.

We would like to express our gratitude to our **MANAGEMENT,** K.S. Institute of Technology, Bengaluru, for providing a very good infrastructure and all the kindness forwarded to us in carrying out this project work in college.

We would like to express our gratitude to **Dr. K.V.A Balaji, CEO**, K.S. Group of Institutions, Bengaluru, for his valuable guidance.

We would like to express our gratitude to **Dr. Dilip Kumar K**, **Principal/Director**, K.S. Institute of Technology, Bengaluru, for his continuous support.

We like to extend our gratitude to **Dr. Suresh M B, Professor and Head**, Department of Artificial Intelligence & Machine Learning, for providing very good facilities and all the support forwarded to us in carrying out this Project work successfully.

Also, we are thankful to **Lakshmi K K** for being our Project Guide whose able guidance this project work has been carried out and completed successfully.

We are also thankful to the teaching and non-teaching staff of department of Artificial Intelligence & Machine Learning, KSIT for helping us in completing the Project Work Phase-II work.

G VINAY KUMAR

HARSHITHA A

LOKARANJAN B S

SAI NEHA D P

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.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES