A Mini Project

on

PRIVACY PRESERVING AND SECURE MACHINE LEARNING

A THESIS

submitted

in the partial fulfillment of the requirements for

the award of the degree of

Bachelor of Technology

in

COMPUTER SCIENCE AND ENGINEERING

by

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2024-2025

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DECLARATION

We are hereby declaring that the Mini project report titled "**PRIVACY PRESERVING AND SECURE MACHINE LEARNING**" under the guidance of **K Priyanka**, **Sree Dattha Institute of Engineering and Science**, Ibrahimpatnam is submitted in partial fulfillment of the requirement for the award of B. Tech. in Computer Science and Engineering is a record of bonafide work carried out by us and the results embodied in this project have not been reproduced or copied from any source.

The results embodied in this project report have not been submitted to any other University or Institute for the award of any Degree or Diploma.

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CERTIFICATE

This is to certify that the Mini project entitled "**PRIVACY PRESERVING AND SECURE MACHINE LEARNING**" is being submitted by **J.Balraj (21E41A0569), N.Joseph Raju (21E41A0565), D.Verendhar (21E41A0562), J.Pavan Kumar (22E45A0529)** in partial fulfillment of the requirements for the award of B. Tech in Computer Science and Engineering to the Jawaharlal Nehru Technological University Hyderabad, is a record of Bonafide work carried out by them under my guidance and supervision during the academic year 2024-25.

The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

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ABSTRACT

Suicidal ideation detection in online social networks is an emerging research area with significant challenges. Recent research has shown that publicly available information, spread across social media platforms, holds valuable indicators for effectively detecting individuals with suicidal intentions. The key challenge in suicide prevention is understanding and detecting the complex risk factors and warning signs that may precipitate such events. In this paper, we present a new approach that uses the social media platform Twitter to quantify suicide warning signs for individuals and to detect posts containing suicide-related content. The main originality of this approach lies in the automatic identification of sudden changes in a user's online behavior. To detect such changes, we combine natural language processing techniques to aggregate behavioral and textual features and pass these features through a martingale framework, which is widely used for change detection in data streams. Experiments show that our text-scoring approach effectively captures warning signs in text compared to traditional machine learning classifiers. Additionally, the application of the martingale framework highlights changes in online behavior and shows promise for detecting behavioral changes in at-risk individuals.

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