A Secure Framework for Detecting “Fake News in Social Media Networks”

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I certify that I have read this thesis (draft) and that in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science.

Prof. Anuradha Jayakody

Approved for MSc. Research Project:

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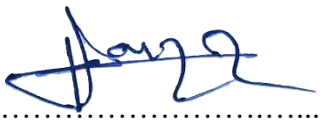
Approved for MSc:

Head of Graduate Studies, FoC, SLIIT

DECLARATION

This is to certify that the work is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Sri Lanka Institute of Information Technology or to any other institution for assessment for any other purpose.

Sign:  .....

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ABSTRACT

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In today's digital era, the proliferation of fake news poses significant challenges to societal trust, political stability, and public perception. This study develops a comprehensive framework for enhancing fake news detection, leveraging advanced machine learning techniques, privacy-preserving methods, and dynamic threat modeling. Key objectives include improving detection accuracy, ensuring user data privacy, and adapting to evolving misinformation tactics. By integrating ensemble learning methods such as Random Forests and Gradient Boosting, along with Natural Language Processing (NLP) techniques, the framework offers superior performance in identifying fake news. Additionally, privacy-preserving techniques like differential privacy and federated learning help address growing concerns over user data confidentiality. The research highlights the importance of ensuring compatibility with major social media platforms to maximize effectiveness and scalability. Comprehensive performance evaluations underscore the robustness of the proposed system. Recommendations include fostering collaboration among stakeholders, strengthening user engagement in evaluation processes, and advancing the framework's adaptability to dynamic misinformation tactics. This research contributes significantly to the ongoing fight against misinformation, promoting a more informed and resilient society through an efficient, privacy-focused detection system.

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