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Notice for the PhD Viva-Voce Examination

Ms Sowmya T, Registration Number: 2072409, PhD Scholar at the Department of Computer Science and Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore will defend her PhD thesis at the public viva-voce examination on Friday, 14 November 2025 at 10.30 am in the Amogha Hall, Fourth Floor, Block III, Bangalore Kengeri Campus, Bengaluru - 560074, Karnataka, India.

Title of the Thesis	:	**Design and Development of Intelligent Agent Based Intrusion Detection System Using Machine Learning Methods**
Discipline	:	**Computer Science and Engineering**
External Examiner - I	:	**Dr Bibhu Datta Sahoo** Professor Department of Computer Science and Engineering National Institute of Technology, Rourkela Odisha - 769008
External Examiner - II	:	**Dr Prabhu Mohandas** Associate Professor Department of Computer Science and Engineering National Institute of Technology Calicut, Kattangal Kerala - 673601
Supervisor	:	**Dr Mary Anita E A** Professor Department of AI, ML and Data Science School of Engineering and Technology Bangalore Kengeri Campus CHRIST (Deemed to be University) Bengaluru - 560074 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

Registrar (Academics)

Place: Bengaluru
Date: 28 October 2025

ABSTRACT

Cybersecurity is a critical aspect of information technology to safeguard data across the network. Sophisticated attacks are increasing because of technological advances. Detecting these attacks is a significant issue in today's digital era. Intrusion Detection Systems play a vital role in ensuring a secure network by identifying malicious threats. To handle the changing nature of attacks and to improve efficiency, an enhanced machine learning based Intrusion Detection System is used by integrating an intelligent feature-selecting agent with an SHiP vector machine for classification. The approach consists of two modules: IV-RFE feature selection agent, which selects the relevant features, and SHiP Vector Machine algorithm, which detects the intrusions effectively. The main aim of the proposed research is to detect diverse attacks by consistently maintaining a high performance across diverse attacks. The proposed model is tested against attacks, namely, Reconnaissance, Analysis and DoS from the UNSWNB15 dataset. To test the robustness of the model, the proposed model is validated against a real-time dataset named PSD-23 containing DoS attacks. The comprehensive results highlight the enhanced effectiveness of the proposed model in comparison with existing approaches.

Keywords: *IDS, Feature Selection, ML, SVM, RFE, Support vectors, Variance.*

Publications:

1. **Sowmya T** and EA Mary Anita. "A comprehensive review of AI based intrusion detection system." Measurement: Sensors 28 (2023): 100827.
2. **Sowmya T** and E. A. M. Anita, "A Novel SHiP Vector Machine for Network Intrusion Detection," in IEEE Access, vol. 13, pp. 117445-117463, 2025, doi: 10.1109/ACCESS.2025.3586296.
3. **Sowmya T,** & Anita, E. M. . (2023). An Intelligent Hybrid GA-PI Feature Selection Technique for Network Intrusion Detection Systems. International Journal of Intelligent Systems and Applications in Engineering, 11(7s), 718–731. Retrieved from https://www.ijisae.org/index.php/IJISAE/article/view/3010.
4. **Sowmya T** and Mary Anita EA. "A novel stable feature selection algorithm for machine learning based intrusion detection system." Procedia Computer Science 252 (2025): 738-747.
5. **Sowmya T**, and G. Muneeswari. "Intelligent Machine Learning Approach for CIDS—Cloud Intrusion Detection System." Computer Networks, Big Data and IoT: Proceedings of ICCBI 2020. Singapore: Springer Singapore, 2021. 873-885.