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Notice for the PhD Viva Voce Examination

Ms Sherin Rappai (Registration Number: 2090213), PhD Scholar at the School of Sciences, CHRIST (Deemed to be University), Bangalore will defend her PhD thesis at the public viva-voce examination on Wednesday, 19 February 2025 at 2.00 pm in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	Integrated Framework Based on Graph Neural Network and Reinforcement Learning for Prediction of Suicidal Risk in Adolescents
Discipline	:	Computer Science
External Examiner - I	:	Dr Suresh S Associate Professor Department of Computer Applications National Institute of Technology, Kurukshetra Haryana - 136119
External Examiner - II	:	Dr K Chandrasekaran Professor Department of Computer Science and Engineering National Institute of Technology Surathkal, Mangalore Karnataka - 575025
Supervisor	:	Dr Gobi R Associate Professor Department of Computer Science School of Sciences CHRIST (Deemed to be University) Bengaluru – 560029 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.

Place: Bengaluru
Date: 11 February 2025

Registrar (Academics)

ABSTRACT

Suicide is a significant public health issue, primarily for adolescents, as it is one of the leading causes of death in this age group. Adolescence is a time of significant physical, emotional, and social changes, and these transitions can increase the risk of suicide, particularly when combined with mental health issues or substance abuse. Recently, computational methods have become valuable tools for understanding and predicting suicidal behavior in adolescents. By using data-driven models and advanced Machine Learning techniques, these methods can identify patterns and risk factors linked to suicide, providing new insights into mental health. Computational methods, such as Graph Neural Networks (GNNs) and Reinforcement Learning have become increasingly crucial in mental health research, particularly for identifying suicide risk in adolescents. For instance, Graph Neural Networks can provide valuable insights into how a person's interactions with their environment might influence their risk of suicide. Meanwhile, reinforcement learning algorithms can continuously improve their predictive accuracy by adapting to new data. These advances in computational models offer powerful tools for better understanding and predicting suicidal behavior.

Using Graph Neural Networks with Reinforcement Learning, this study will examine the connections between teen suicide thoughts and several risk variables. A dataset of suicide-related questionnaires was used to analyze suicide ideation among adolescents using Graph Reinforcement Learning to find essential trends and risk variables related to suicide ideation. The research findings provide crucial guidance for the creation of preventive interventions that effectively address teenage suicidal ideation. The GraphSAGE Reinforcement Learning algorithm's performance is evaluated against popular current algorithms such as Random Forest, Convolutional Neural Network, Convolutional Neural Network_Long Short-Term Memory, Graph Convolutional Network, and GraphSAGE. According to the results, GraphSAGE Reinforcement Learning outperforms the other models in terms of all the performance metrics like accuracy, specificity, sensitivity, and F1-Score.

Keywords: Graph Neural Network, Reinforcement Learning, Adolescents, Suicide Ideation, Deep Learning

Publications:

1. Empirical study on The Role of Machine Learning in Stress Assessment among Adolescents, **Rappai, S.**, Ramasamy, G R.4th International Conference on Communication, Computing and Industry 6.0, C216 2023: **Indexed in Scopus**
2. Computational Methods to Predict Suicide Ideation among Adolescents **Rappai, S.** Ramasamy, G. Proceedings - IEEE International Conference on Advances in Computing, Communication and Applied Informatics, ACCAI 2022: **Indexed in Scopus**
3. Navigating the Emotional Maze: Understanding Adolescent Suicidal Ideation using CNN-LSTM Model, **Rappai, S.** Ramasamy, G, Intelligent Decision Technologies An International Journal, Vol.18, Issue.3, Pages.1797-1811: **Scopus Q3.**