Notice for the PhD Viva Voce Examination

Mr Libin Thomas (Registration Number: 1942045), PhD scholar at the School of Sciences, CHRIST (Deemed to be University), Bangalore will defend his PhD thesis at the public viva-voce examination Thursday, 11 July 2024 at 2.30 pm in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029.

Title of the Thesis	:	**VANET Framework for Optimal Target Selection in Handoff Using Machine Learning**
Discipline	:	**Computer Science**
External Examiner (Outside Karnataka)	:	**Dr Ramesh T** Associate Professor Department of Information Technology Bharathiar University Coimbatore Tamil Nadu
External Examiner (Within Karnataka)	:	**Dr P Karthikeyan** Associate Professor School of Computer Science and Engineering R V University Bengaluru - 560059 Karnataka
Supervisor	:	**Dr Sandeep J** Assistant 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: 04 July 2024

Registrar

ABSTRACT

The impact of mobile networking has been far-reaching and has transformed many technologies for the better. Among the more pioneering technologies of recent times, autonomous vehicles (AV) are being touted as the future of transportation. AVs are featured prominently due to their ability to provide services across the implementations concerning smart-city applications. Since the nodes (AV) involved are highly mobile, it is important to keep the device connected and adapt the dynamic topology change. The network should be capable of switching AV between access points (AP's) dynamic and must take place without much delay. Handoff is the process where a node switches between APs depending on the changes in the network topology. Various studies have claims that the use of Machine Learning or Deep Learning improves the efficiency of decision making in mobile networks.

In this research work a dynamic handoff framework, inspired by the traditional Indian game of "Kho-Kho" is proposed. It selects the most optimal AP for communication in a mobile environment.Initially the nodes within an AP are categorized as sticking and steering nodes. Identifying the nodeslist for executing the Kho-Kho based handoff for the steering nodes. The framework makes use of Artificial Neural Networks (ANN) to perform the operation of handoff and selects the most optimal AP once the handoff trigger occurs. ANN is designed for multiple parameters, including signal strength, noise, and direction to make its decisions regarding handoff. The proposed Kho-Kho model has been implemented and analyzed using the NS3 simulator. Simulation results have indicated a higher performance of the proposed Kho-Kho approach when compared to the existing standard implemented for vehicular ad hoc communications in IEEE 802.11p.

Keywords - Kho Kho Model, Handoff, DSRC, WAVE, IEEE 802.11p, RBFNN, Vehicle Mobility, Vehicular Ad Hoc Networks

Publications:

1. Handoff schemes in mobile environments: a comparative study, Libin Thomas, J Sandeep, Bhargavi Goswami, Joy Paulose, International Journal of Service Science, Management, Engineering, and Technology, IGI Global, vol 11(1), 55-72, 2020
2. Novel model to inculcate proactive behaviour in programmable switches for floodlight- controlled software defined network, Mohammed Asif Khan, Bhargavi Goswami, Joy Paulose, Libin Thomas, Transactions of the Japan Society for Computational Engineering and Science, vol. 747(17) 1-19, 2020.
3. Implementing and Experimenting with OpenMUL Scalability in Software Defined Network, Shivalika Singh, Bhargavi Goswami, Joy Paulose, Libin Thomas, Journal of Network Communications and Emerging Technologies, vol. 11(1), 1-12, 2021.
4. Stress Analysis based on Atmospheric, Physical, and Personal Stressors to Improve Deployment of Military Personnel, Monica Pallavi J, Vinodhini S, Sandeep J, Libin Thomas, Kirubanand V B, Balamurugan E, NeuroQuantology, 20(5)2206-2023, 2022

Book Chapters:

1. On Combinatorial Handoff Strategies for Spectrum Mobility in Ad Hoc Networks: A Comparative Review, Libin Thomas, J Sandeep, Joy Paulose, C Smera, K Amrutha, Jinsi Jose, K Kavipriya, Sayant Vijay, ICT with Intelligent Applications, Springer, 727-741, Springer, 2022 (SCOPUS).
2. A Review on Synchronization and Localization of Devices in WSN, Varun M.N Somanna, J Sandeep, Liin Thomas, Sustainable Advanced Computing, Springer, vol. 840, 585-602, 2022.