Notice for the PhD Viva Voce Examination

Ms Smera C (Registration Number: 1942049), 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 Saturday, 6 April 2024 at 10.00 am in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029.

Title of the Thesis	:	**Rate Adaptation Mechanism for Multirate WLAN With Background Traffic Awareness**
Discipline	:	**Computer Science**
External Examiner (Outside Karnataka)	:	**Dr P Ranjit Jeba Thangaiah** Professor Department of Digital Sciences Karunya Institute of Technology and Sciences Coimbatore, Tamil Nadu - 641114
External Examiner (Within Karnataka)	:	**Dr Nagaraj V Dharwadkar** Associate Professor Department of Computer Science and Engineering Central University of Karnataka (CUK), Kadaganchi Kalaburagi – 585367 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: 22 March 2024

Registrar

ABSTRACT

In recent times wireless communication has become more popular with its commercial usage. WLAN has evolved over the years to facilitate wireless communications for commercial usage. IEEE 802.11 working group focuses on developing global standards that can support the WLAN evolution. The popularity of Wi-Fi leads the introduction of different versions of IEEE 802.11 standards. The latest versions of Wi-Fi support multi rates, and support switching between these rates to improve the throughput. Dynamically identifying the optimal transmission rate from a list of single-stream transmission rates is a tedious task because of the volatile nature of the network. The rate adaptation algorithms identifying best rate by observing the channel condition.

This research focuses to design a background aware rate adaptation model for WLAN based on Block Acknowledgment and received signal strength indicator (RSSI). The proposed Channel Estimator Endorsed Rate Adaptation (CEERA) algorithm utilizes the signal strength history to identify the environment better. This work includes the implementation of the CEERA algorithm with Network Simulator 3(NS3). The performance of the CEERA algorithm is compared with well-known existing algorithms RaCA and Minstrel-HT. Result indicates that CEERA outperforms the other two algorithms in non-congested and congested environment in terms of throughput. CEERA has a throughput improvement between 0.02% and 0.06%. The research also proves that CEERA provides more energy-efficiency.

Keywords: *Block acknowledgment, IEEE 802.11, rate adaptation, RSSI, Wi-Fi.*

Publications:

1. **Smera C,** Networks Simulation: Research Based Implementation using Tools and Approaches- *2022 IEEE 3rd Global Conference for Advancement in Technology (GCAT)*, IEEE-2023 – **(Scopus)**
2. **Smera C,** A Review of Channel Estimation Mechanisms in Wireless Communication Networks- 2021 *5th International Conference on Electronics, Communication and Aerospace Technology (ICECA)*, IEEE-2021- **(Scopus)**
3. **Smera C,** Blockchain and Its Integration in IoT - *Computer Networks and Inventive Communication Technologies*-Springer- 2023- **(Scopus)**
4. **Smera C,** On Combinatorial Handoff Strategies for Spectrum Mobility in Ad Hoc Networks: A Comparative Review, ICT with Intelligent Applications- Springer- 2021- **(Scopus)**
5. **Smera C,** Forecasting and Decision-Making System for Military Resource Allotment- Proceedings *of the 3rd International Conference on Integrated Intelligent Computing Communication & Security (ICIIC 2021)*, Atlantis Highlights in Computer Sciences- 2021