



Notice for the PhD Viva Voce Examination

Ms S Lakshmi, Registration Number: 1942046, PhD Scholar at the Department of Computer Science, School of Sciences, CHRIST (Deemed to be University) will defend her PhD thesis at the public viva-voce examination on Monday, 09 June 2025 at 11.00 am in Room No. 044, Ground Floor, R & D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

Title of the Thesis	:	Elastic Intelligent Cloud Architecture for Academic Community
Discipline	:	Computer Science
External Examiner – I	:	Dr Belén Bermejo González Senior Lecturer Department of Mathematics and Computer Science Universitat de les Illes Balears. Cra. de Valldemossa 07122 Palma (Illes Balears) Palma de Mallorca, Spain
External Examiner - II	:	Dr Modi Chirag N Associate Professor Department of Computer Science Engineering National Institute of Technology, Goa, Cuncolim Salcete - 403703, Goa
Supervisor	:	Dr Saleema J S Associate Professor Department of Statistics and Data Science School of Sciences CHRIST (Deemed to be University) Bengaluru - 560029 Karnataka
Co-Supervisor	:	Dr Basem Suleiman Adjunct Senior Lecturer School of Computing Science University of Sydney Camperdown, New South Wales, 2050, Australia

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: 03 June 2025


Registrar (Academics)

ABSTRACT

In today's cloud computing landscape, the need for reliable, scalable, and elastic cloud platforms is as essential as utilities like gas and water. This research, titled "Elastic Intelligent Cloud Architecture for Academic Community" examines how education institutions can adopt cloud computing to meet growing infrastructure demands—particularly those heightened by the shift to digital learning during the Covid-19 pandemic. Academic workload such as empirical research experimentation, education of large classes, Innovations through proof of concepts in research labs, open-source software distribution etc. had., put significant workload on the availability of computing resources. Dynamically scaling it according to growing needs is challenging. To address these problems, this thesis proposes a framework named OSAUNI that consists of three APIs of open stack to validate the openness of a cloud infrastructure for its practical applicability and value.

The study explores optimization techniques for cloud and the scheduling tools in cloud computing. Intelligent agents use online learning to enable real-time decision-making for resource optimization. Cloud simulators, help develop resource scheduling algorithms that fine-tune essential parameters like cost and time via the novel "Shortest Length Before" approach. Configurations of cloud resources were based on standard AWS machine sizes. The proposed framework is to offer significant advantages to the academic cloud community by enabling better scaling of workloads through agent optimization techniques.

Keywords: *Cloud Infrastructure, CloudSim, Scheduling, Intelligence, Workflows, Workloads, Data sets, Cloud Tiers, Data center, Heuristics, Task Scheduling, Virtual machines*

Publications:

1. **L. Sankaran**, J. S. Saleema, and B. Suleiman, 'Policies and metrics for schedulers in cloud data-centers using CloudSim simulator', *International Journal of Data Science and Analytics*, Switzerland, ISSN: 23644168, 2023. <https://doi.org/10.1007/s41060-023-00478-6>
2. **L. Sankaran**, J. Saleema and B. Suleiman, 'Analysis of Workloads for Cloud Services,' in *2022 IEEE/ACIS 7th International Conference on Big Data, Cloud Computing, and Data Science (BCD)*, Danang, Vietnam, ISBN: 978-1-6654-6582-3, pp. 117-123, 2022
<https://doi.ieeecomputersociety.org/10.1109/BCD54882.2022.9900564>
3. **L. Sankaran**, J. S. Saleema, 'Cloudsim exploration: A knowledge framework for cloud computing researchers', *Lecture Notes in Networks and Systems*, Singapore, ISSN: 23673370, vol. 187, pp. 107–122, 2021, https://doi.org/10.1007/978-981-33-6173-7_8
4. Saleema JS, Lakshmi Shankar Iyer, **Lakshmi Sankaran**, 'Framework for Bridging the Skill Gap between Higher Education Institutions and Industry: A Machine Learning Approach' in *Cloud Computing for Smart Education and Collaborative Learning*, Taylor & Francis, New York, March 2025, ISBN 9781003472537
5. **L. Sankaran**, J. S. Saleema, and B. Suleiman, 'OSAUNI - A innovative framework for Openstack Architecture In University', *Indian patent publication* No.202441002429, DOP: 02-Feb-2024