

**CHRIST**(DEEMED TO BE UNIVERSITY)  
BANGALORE | DELHI NCR | PUNE

## Notice for the PhD Viva Voce Examination

Ms Sarithadevi S, Registration Number: 2090212, 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 Friday, 19 June 2026 at 10.30 am in Room No. 044, Ground Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

<b>Title of the Thesis</b>	:	<b>Efficient Character Recognition System for Malayalam Old Script in Palm Leaf Manuscripts</b>
<b>Discipline</b>	:	<b>Computer Science</b>
<b>External Examiner - I</b>	:	<b>Dr U Srinivasulu Reddy</b> Associate Professor Department of Computer Applications National Institute of Technology Tiruchirappalli Near BHEL, Tiruchirappalli – 620015 Tamil Nadu
<b>External Examiner - II</b>	:	<b>Dr Tanmay Kasbe</b> Associate Professor Shri Vaishnav Institute of Computer Applications Shri Vaishnav Vidyapeeth Vishwavidyalaya Campus Indore – 453111 Madhya Pradesh
<b>Supervisor</b>	:	<b>Dr Rajesh R</b> Professor Department of Statistics and Data 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.

**Registrar (Academics)**

**Place:** Bengaluru  
**Date:** 29 May 2026

## ABSTRACT

Ancient palm leaf manuscripts are treasure troves of traditional knowledge and wisdom. For South Asian cultures and languages, palm leaf manuscripts have been the primary medium of writing before printing technology was introduced and have disseminated a wide range of works, both literary and otherwise. Since palm leaf manuscripts have a higher likelihood of deterioration due to age and environmental factors, it is crucial to preserve these documents and the information contained in them. This research work proposes a digitization mechanism for Malayalam palm leaf manuscripts through an optimal palm leaf character recognition framework. Each page in a palm leaf manuscript, captured as an image, goes through a preprocessing pipeline before it is segmented into individual characters. A Convolutional Bi-directional AutoEncoder-assisted Generative Adversarial Deblurring (CBiAE\_GADeblur) framework is applied on images with degraded or blurred characters. Segmentation is performed through Hybrid Mid-point Connected component Vertical Projection (HMCVP). Segmentation is followed by a feature extraction phase, which derives the optimal set of features to be used for character recognition. A novel Chemotactic Dense Neural Network(CDCNN) framework is implemented for accurate recognition of Malayalam palm leaf characters. The predicted characters are mapped to modern Malayalam script through a lookup table stored as part of the source code for the system. With the predicted characters, the palm leaf documents can be represented as digital text, which can be easily stored, catalogued, and preserved for generations. The novel method was able to achieve 99.28% accuracy and performance comparison with other models with regard to metrics such as precision, SSIM, MSE, and PSNR also establishes that it achieves better results than the existing approaches. In the future, the system can be expanded and validated using larger datasets as well as newer, deeper learning models to adapt it to more languages.

**Keywords:** Malayalam Palm leaf manuscripts, CBiAE\_GADeblur framework, CDCNN framework.

### Publications:

1. **Sarithadevi, S., & Rajesh, R. (2025).** Convolutional bi-directional autoencoder assisted generative adversarial de-blurring framework for palm leaf character analysis. *Sādhanā*, 50(4), 269.
2. **Sarithadevi, S., & Rajesh, R. (2023, May).** Character recognition for Malayalam palm leaf manuscripts: An overview of techniques and challenges. In *INTERNATIONAL [CONF.ON HUMANS AND TECHNOLOGY: A HOLISTIC AND SYMBIOTIC APPROACH TO SUSTAINABLE DEVELOPMENT: ICHT 2022](#) (Vol. 2773, No. 1, p. 020003)*. AIP Publishing LLC.