Notice for the PhD Viva Voce Examination

Ms Solley Joseph (Reg. No. 1740072), PhD scholar at CHRIST (Deemed to be University), will defend her PhD thesis at the public viva-voce examination on Saturday, 17 July 2021 at 9.30 am on the WebEx Meeting platform.

Title of the Thesis	:	**Design and Development of an Efficient Model for Handwritten MODI Script Recognition**
Discipline	:	**Computer Science**
External Examiner (Outside Karnataka)	:	**Dr Vivek Deshpande** Professor and Director Vishwakarma Institute of Information Technology Survey No. 3/4, Kondhwa (Budruk) Pune – 411048 Maharashtra
External Examiner (Within Karnataka)	:	**Dr Thippeswamy G** Professor and Dean BMS Institute of Technology and Management Doddaballapur Main Road Avalahalli, Yelahanka Bengaluru - 560064 Karnataka
Supervisor	:	**Dr Jossy P George** Professor and Director CHRIST (Deemed to be University) Pune Lavasa Campus Pune, Maharashtra - 412112

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.

Registrar

Place: Bengaluru
Date: 11 July 2021

ABSTRACT

Machine simulation of human reading had caught the attention of computer science researchers since the introduction of digital computers. Character recognition, a branch of pattern recognition and computer vision, is the process of identifying either printed or handwritten text from document images and converting it into machine-coded text. Character recognition has been successfully implemented for various foreign language scripts like English, Chinese and Latin. In the case of Indian language scripts, the character recognition process is comparatively difficult due to various complexities such as the presence of the vowel modifiers and a large number of characters (class). MODI script is a shorthand form of Devanagari script and was used as an official script for writing Marathi until 1952. Presently the script is not used officially, but has historical importance. MODI script is a cursive script and the character recognition task is difficult due to various reasons such as variations in the shapes of a character with different individuals and the presence of identical-looking characters. MODI documents do not have any word demarcation symbols and that adds to the complexity of the task. The advances in various Machine Learning techniques have greatly contributed to the success of optical character recognition. The main objective of the proposed work is to explore various Machine Learning and Deep Learning techniques that can be effectively used to recognize MODI scripts and build a reliable and robust character recognition model for handwritten MODI scripts. This research work also aims to develop a Machine Transliteration and text recognition system for MODI manuscripts using Deep Neural Networks.

The implementation is carried out using four experimental models; three models for improving the accuracy of the MODI script character recognition and one model for MODI to Marathi Transliteration using the Deep Learning based method. The first of the four is a hybrid model which is implemented using Wavelet Transform (WT) and Singular Value Decomposition (SVD) method. The second model is implemented using Convolutional Neural Network (CNN) for character recognition. In the third model, the CNN autoencoder is implemented at the Feature Extraction stage of the character recognition process. The fourth model is for the Machine Transliteration of MODI script text to Marathi text. This model is implemented using Convolutional Recurrent Neural Network (CRNN) based method.

Keywords:- MODI script, Handwritten Character Recognition, Pattern Recognition, CNN Autoencoder, Deep Neural Networks, CRNN, MODI-Marathi Transliteration, Wavelet Transform.