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Accredited with A++ Grade by NAAC (4th Cycle)
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Coimbatore – 641014

DEPARTMENT OF COMPUTER SCIENCE (SF)

Organised by

INTERNATIONAL CONFERENCE ON RECENT TRENDS IN COMPUTATIONAL TECHNOLOGIES AND SUSTAINABLE DEVELOPMENT GOALS (ICRTCTS - 2025)

25th MARCH 2025

Editors
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Dr.S.Rekha

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DESIGN AND DEVELOPMENT OF ENHANCED DEEP LEARNING METHODOLOGY FOR TAMIL MANUSCRIPTS EXTRACTION USING HYBRID CNN-LSTM-CTC

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Abstract

Data extraction from manuscripts using Deep Learning emerged as a crucial task in various fields, including historical document analysis, digitization of records and information retrieval. With the advent of deep learning, new possibilities for efficient and accurate data extraction have surfaced. This paper explores a systematic approach by combining segmentation, Convolutional Neural Network (CNN) and classification techniques. This helps to extract meaningful information from handwritten and printed manuscripts. Tamil manuscripts, rich in cultural and historical significance faces unique challenges for data extraction due to their complex scripts, varied writing styles and degradation over time. So it is necessary to review the challenges, datasets, pre-processing methods, and state-of-the-art in deep learning approaches. A hybrid CNN-Long Short-term Memory (LSTM)- Connectionist Temporal Classification(CTC) is proposed. In this approach, preprocessing can be done using Optical Character Recognition (OCR).A well-suited LSTN-CNN is used for capturing sequential dependencies in text. Finally CTC function helps in handwritten text recognition and text extraction of Tamil manuscripts.

Keywords-Deep Learning, Tamil manuscripts, Convolutional Neural Network (CNN), Long Short-Term Memory (LSTM), Connectionist Temporal Classification.