| Paper Name (Authors, Year) | Summary | Technologies Discussed | Advantages | Drawbacks |
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| Handwritten Malayalam Character Recognition System using Artificial Neural Networks | The document outlines a system for recognizing handwritten Malayalam characters using CNNs. It processes images with preprocessing, segmentation, and classification, achieving 91% accuracy using the Amrita MalCharDb dataset. Future work includes expanding to recognize words and sentences. | Artificial Neural Networks (ANNs), Convolutional Neural Networks (CNNs), Python, OpenCV, Amrita MalCharDb Dataset. | The system achieves 91% accuracy in recognizing Malayalam characters using CNNs and the Amrita MalCharDb dataset. It is scalable for future recognition of words and sentences and supports real-time testing. | The system relies on a single dataset and faces challenges with Malayalam’s complex script. Further development is needed for broader applications. |
| On developing handwritten character image database for Malayalam  language script | The paper proposes a system for recognizing handwritten Malayalam words using a neural network with backpropagation. The system preprocesses input, extracts features, and employs a Multilayer Perceptron (MLP) to recognize individual characters, which are combined to form words. | Neural Networks (Multilayer Perceptron),  Backpropagation Algorithm,  Direction Feature Extraction Technique. | The system is effective in managing variations in handwriting and can recognize multiple Malayalam characters. It demonstrates high adaptability to different input styles and can also be extended to the recognition of printed text. | The system is computationally intensive during the training phase and is susceptible to local minima during weight optimization. It requires extensive preprocessing to achieve accurate recognition and has limited generalization to unseen handwriting variations without robust training data. |
| Segmentation of Malayalam Handwritten Characters into Pattern Primitives and Recognition using SVM | The paper presents a method for online handwritten Malayalam character recognition using segmentation into pattern primitives. It employs a combined Ramer-Douglas-Peucker and Freeman code algorithm for segmentation and a Support Vector Machine classifier. The approach achieved 95.77% accuracy for eight vowel characters, emphasizing real-time applications. | Ramer-Douglas-Peucker Algorithm, Eight Direction Freeman Code, Support Vector Machine (SVM), Normalization, Smoothing, Re-sampling, Pattern Primitives, Cross-Validation. | Achieves 95.77% accuracy with five-fold cross-validation, offers efficient segmentation, reduces computational complexity, and enables real-time Malayalam handwriting recognition. | Limited to Malayalam vowel characters, struggles with visually similar characters, and lacks extension to the full Malayalam script set. |
| A Novel Method on Malayalam Handwritten Character Recognition | The paper focuses on recognizing Malayalam handwritten characters using a texture-based model with co-occurrence matrices and Euclidean distances, achieving 89% accuracy. It addresses the challenges of complex characters and suggests future improvements for recognizing similar characters. | Feature Extraction, Classification, Texture Analysis, | This method is simple, interpretable, and computationally efficient, with 89% accuracy, suitable for systems with limited resources. | It struggles with similar characters and lacks the adaptability of deep learning models. |
| An Efficient Character Recognition System for Handwritten  Malayalam Characters Based on Intensity Variations | This paper presents an Optical Character Recognition (OCR) system for handwritten Malayalam characters using intensity variations and HLH patterns. It classifies characters into three categories (Ra, Pa, and special symbols) based on shape features. The system achieves 92% accuracy with 2490 characters in a noiseless environment, producing editable outputs. | Optical Character Recognition (OCR), HLH Intensity Patterns, Light Pen Input, Dynamic Window Matrix, Feature Extraction, Image Processing, Character Separation Algorithm, Horizontal and Vertical Checks, Pattern Analysis, Special Recurrence Algorithms. | High 92% accuracy, supports connected characters, handles diverse styles, produces editable text, employs efficient feature extraction and classification techniques. | Limited scope to noiseless environments, low horizontal recognition accuracy, and challenges with diverse handwritten Malayalam styles and complexities. |