Hand Written Character Recognition using Deep Neural Network

Shital Bagal, Vaishnavi Deore, Samiksha Adsare, Shreya Thube, M. P Bhandakkar
Department of Information Technology
Matoshree Aasarabai Polytechnic, Eklahare, Nashik, Maharashtra, India

Abstract*: Handwritten Character Recognition (HCR) is a critical application in the field of pattern recognition and artificial intelligence, enabling machines to interpret and understand human handwriting. This technology has significant applications in document digitization, automated data entry, postal services, bank check processing, and many other fields. We're working on creating a strong and efficient system to recognize handwritten characters. Our project will use a Deep Neural Network (DNN) and a Convolutional Neural Network (CNN) to make this happen.In this project, we leverage the powerful feature extraction capabilities of CNNs to create a highly accurate character recognition model. Neural Networks (CNNs) are great for handling images because they can automatically and flexibly figure out the important details within them. They learn to recognize different levels of features, starting from simple elements like edges and textures, and moving up to more complex shapes and patterns..The model architecture includes multiple convolutional layers, max-pooling layers, and fully connected layers, followed by a softmax classifier to categorize handwritten characters. The dataset used for this project comprises labeled images of handwritten characters, sourced from publicly available datasets like the Modified National Institute of Standards and Technology (MNIST) database for digits or similar datasets for alphabetic characters We'll test how well our proposed model works by using a separate dataset specifically for validation. We'll measure its performance based on how accurate it is, how precise its results are, how well it recalls information, and its overall F1-score.*

Keywords: Handwritten Character Recognition