

Optical Character recognition Bangla Language using Deep learning

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Presentation Outline



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Introduction

Optical Character recognition Bangla Language using
Deep learning

Optical Character Recognition (OCR) is a technology that enables the recognition of text in digital images or scanned documents. It is a process of converting printed or handwritten text into machine-encoded text. OCR has been used to convert many languages into machine-readable forms, including Bangla.

Problem Statement

“The primary objective of this project is to design and implement an accurate and efficient OCR system for Bangla language documents using deep learning methodologies.”

Claimed Contribution

- i • Dataset Collection
- ii • Preprocessing and Data Augmentation
- iii • Training and Optimization
- iv • Deployment and User Interface



Background & Related Work

- **Optical Character Recognition (OCR)** is a technology that aims to convert images or scanned documents containing printed or handwritten text into machine-encoded text.
- Building a large and diverse dataset of Bangla characters, words, and sentences is crucial for training and evaluating OCR models. Researchers have compiled and released publicly available datasets containing Bangla characters and texts, such as BanglaLekha-Isolated, BanglaLekha-Connected
- **User Experience and Interaction Design**
This work focuses on enhancing the user experience and interaction design aspects of deep learning-based OCR. Common preprocessing steps include image binarization, noise removal, skew correction, and segmentation.



Proposed Methodology



Step 1: Data Collection and Preprocessing

1.1 Collect a large dataset of handwritten Bangla characters and digits. The dataset should include various writing styles and variations to ensure diversity.

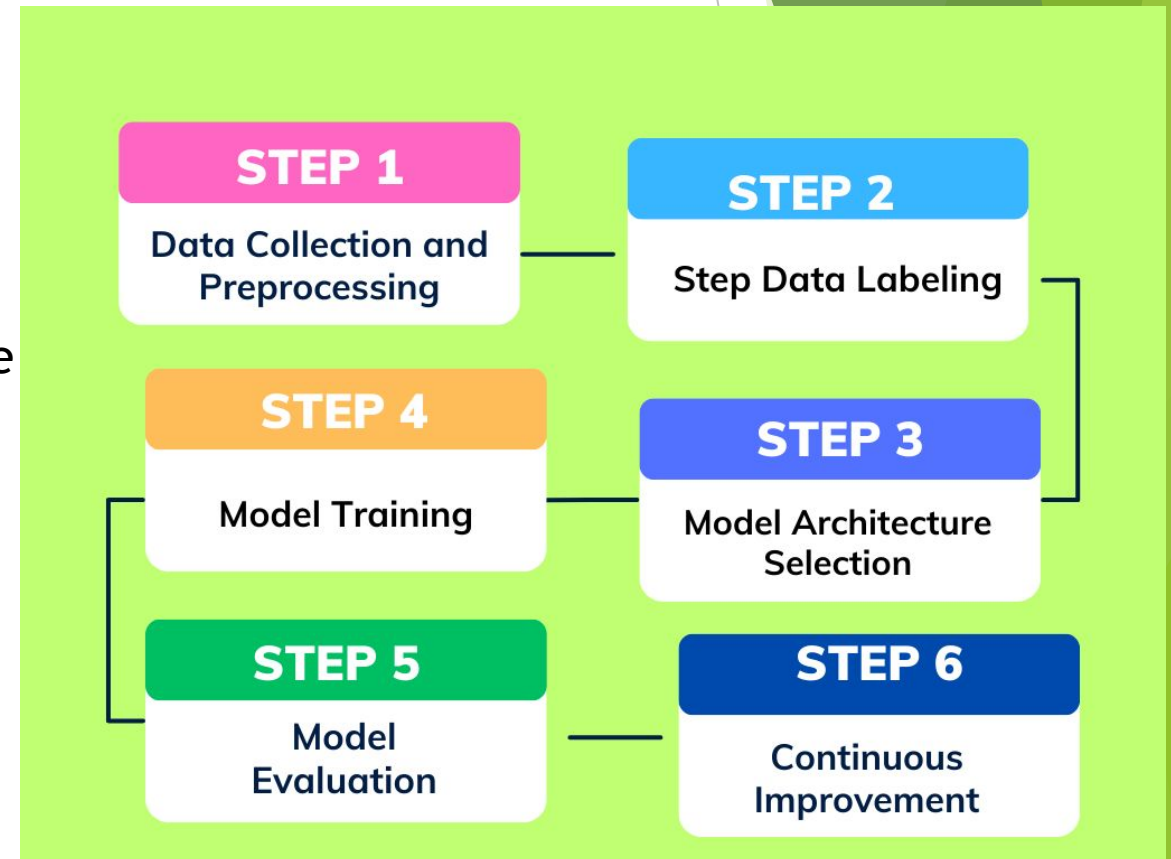
1.2 Preprocess the data to normalize and standardize the images. Convert them to grayscale and resize them to a fixed dimension to facilitate training.

Step 2: Data Labeling

2.1 Manually label each image in the dataset with the corresponding Bangla character or digit to create a labeled dataset for supervised learning.

Step 3: Model Architecture Selection

3.1 Choose a Convolutional Neural Network (CNN) architecture suitable for character recognition tasks. The CNN architecture is well-suited to handle image data and learn features effectively.



Methodology(Contd.)

Step 4: Model Training

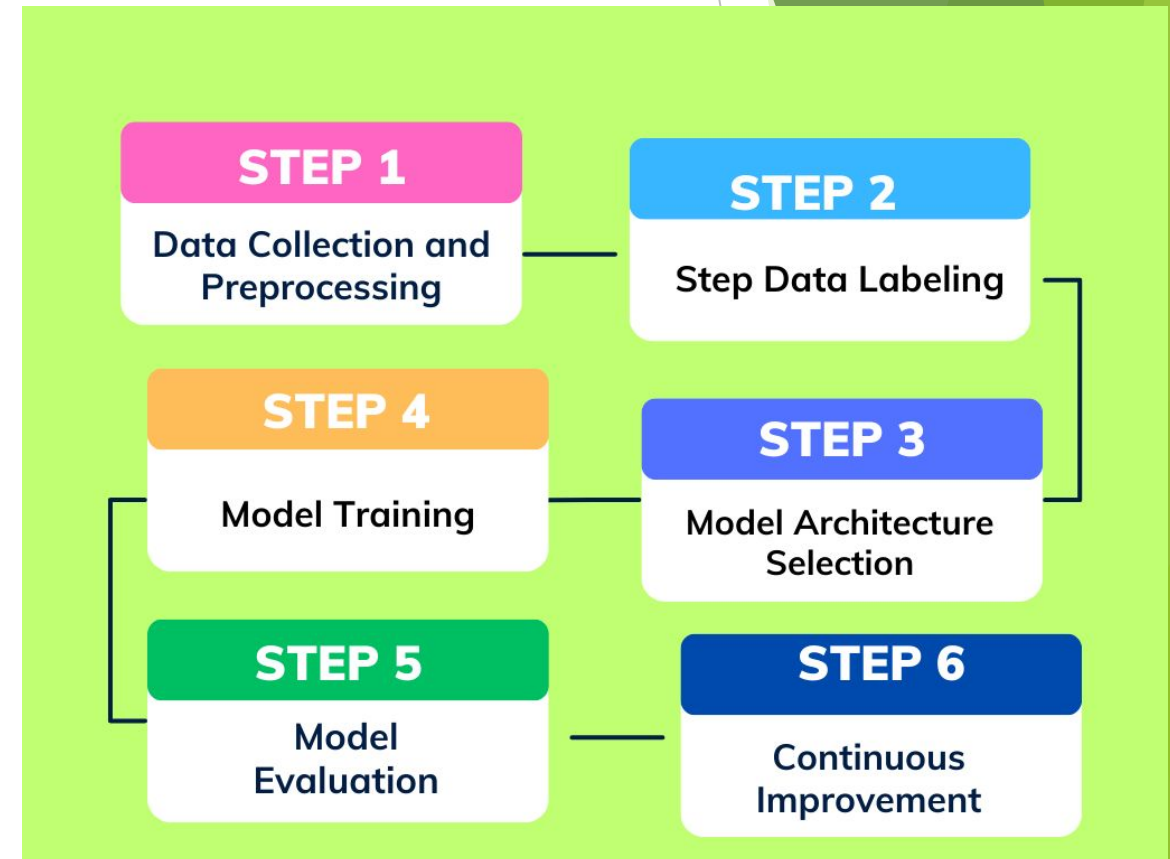
4.1 Train the chosen CNN model on the training data using a suitable optimization algorithm

Step 5: Model Evaluation

5.1 Evaluate the trained model on a separate test dataset that was not used during training. Measure performance metrics such as accuracy

Step 6: Continuous Improvement

5.2 Regularly update and retrain the OCR model with new data to adapt to changing handwriting styles and improve recognition performance



Conclusions

Our proposed methodology is able to overcome shortcomings

More analysis is needed to overcome the working process.

Required to implement for Real time scenario

i

- Accuracy Improvement

ii

- Data Availability

iii

- Language Complexity

iv

- Real-World Applications

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Thank You

Any Questions?