



R. P. Shaha University

- an institution of Kumudini Welfare Trust of Bengal (BD) Ltd.

BanglaTaka: A Dataset for Classification of Bangladeshi Banknotes

Based on the paper by Md. Naimul Islam Nuhash and Sadia Akter (2025)

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Introduction

- ❑ Automated classification of banknotes is crucial for financial security.
- ❑ Manual verification is slow and error-prone.
- ❑ BanglaTaka dataset provides 5073 high-quality images of 9 denominations.
- ❑ Enables ML models to classify Bangladeshi banknotes effectively.

Dataset Overview

- Total Images: 5073 (JPG format)
- Denominations: 2, 5, 10, 20, 50, 100, 200, 500, 1000 BDT
- Collected from Dhaka, Rajshahi, Khulna, Sylhet, etc.
- Captured under varying lighting and angle conditions.
- Devices: iPhone 12 Pro, Samsung M31, Realme C25s, Redmi Note 13.

Table 1. Dataset description with sample image.

Directory	Class	Number of images	Sample image
Bangladeshi_Paper_Currency_Raw	2	445	
	5	660	
	10	419	
	20	480	
	50	418	
	100	566	
	200	423	
	500	1243	
	1000	421	

Sample of banknotes with different physical states.



Bent



Torn



Soiled



Faded



Repaired



Stained



Ink Marked



Clean



Old



New

Excluded images due to quality issues.



Incomplete Banknotes

Excessive noise

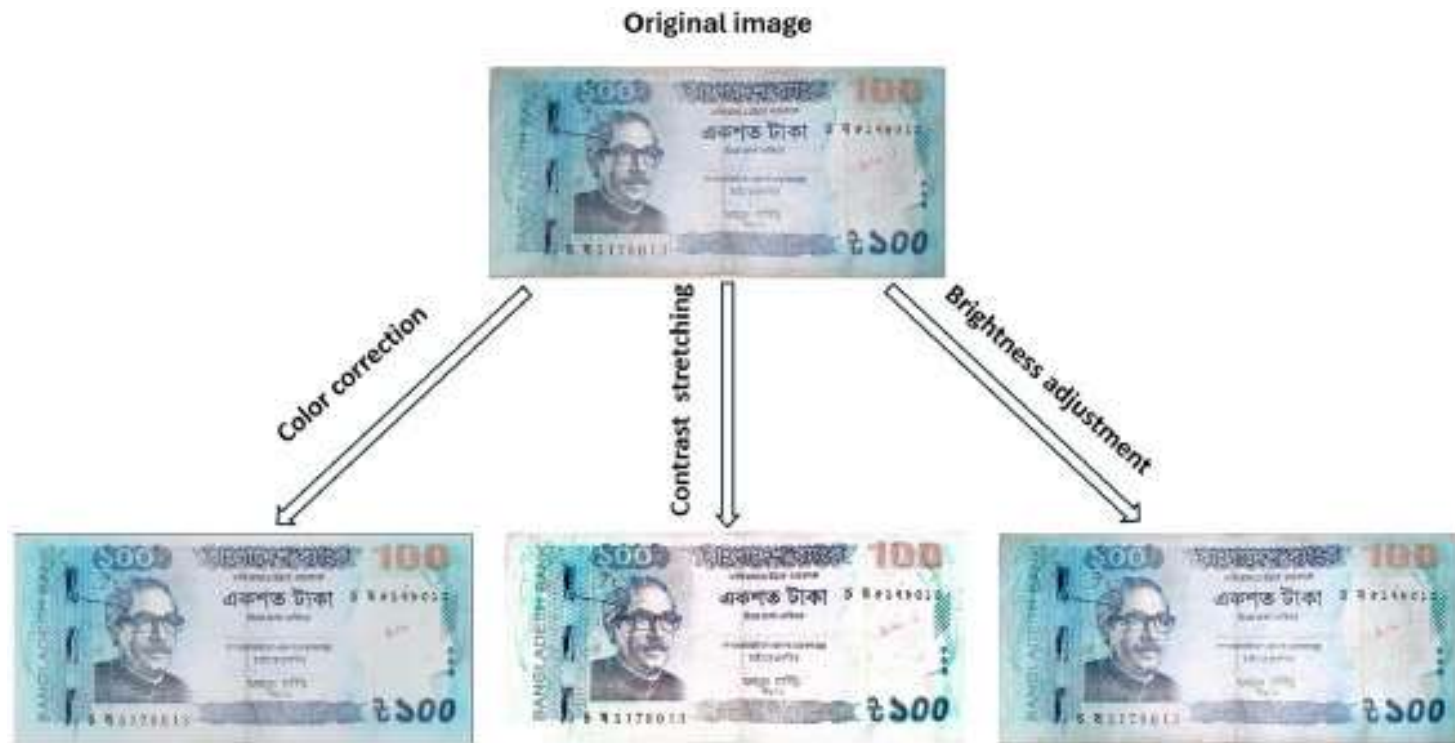


Blurred image



Duplicate image (one image retained)

Application of image enhancement



Cropping of raw image to extract clean banknote region.



Original Image



Cropping



Final Image after Cropping

Methodology

- ❑ Data collected from shops, banks, markets, and homes.
- ❑ Each image labeled by denomination.
- ❑ Preprocessing steps:
 - Cropping and contrast adjustment.
 - Orientation normalization.
 - Brightness and color correction.
- ❑ Ensures robustness and real-world applicability.

Key Contributions

- First large-scale dataset for Bangladeshi banknotes.
- Includes new, old, worn, and damaged notes.
- Captured using multiple devices for diversity.
- Background-free, high-quality images.
- Supports ML research in finance automation and counterfeit detection.

Experimental Design

- ✓ Images categorized into 9 classes based on denominations.
- ✓ Rigorous quality control: blurred, cropped, or duplicated images removed.
- ✓ Processed images enhanced using CamScanner and mobile editors.
- ✓ Dataset organized for ML model training and testing.

Process Steps



Banknote selection



Data source selection



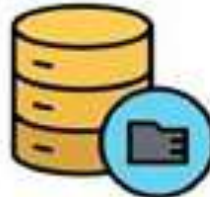
Image capturing



Data storing



Image processing



Limitations

- Mostly controlled environment images.
- Unequal representation of denominations.
- No counterfeit samples included.
- Limited to Bangladeshi currency.
- Future work: Add forged samples and UV imaging for authenticity detection.

Value of the Dataset

- ✓ Promotes innovation in financial automation.
- ✓ Enhances banknote recognition systems.
- ✓ Helps prevent fraud and improve ATM accuracy.
- ✓ Enables deep learning models for currency classification.
- ✓ Encourages local research in FinTech and AI.

Connection to Machine Learning Concepts

- Demonstrates supervised image classification.
- Uses data preprocessing and normalization.
- Can be applied using CNN, EfficientNet, or ViT.
- Relevant to financial automation and computer vision topics.

Conclusion

- ❖ BanglaTaka is a foundational dataset that strengthens ML research
- ❖ in Bangladeshi financial automation.
- ❖ It addresses dataset limitations and promotes robust currency recognition systems.

References & Related Work

1. [NSTU-BDTAKA: An open dataset for Bangladeshi paper currency detection and recognition \(2024\) — M. J. A. Rafi et al.](#)
2. [BD Currency Detection: A CNN-Based Approach with Mobile App Integration.](#)
3. [Real time Yemeni Currency Detection.](#)
4. [Efficient currency recognition and value detection system for multiple nations \(2024\) — \(Deep Learning\)](#)