SPL1 Project Proposal Form, 2025
Institute of Information Technology (IIT)
University of Dhaka

Student's Name:	Mst. Ishrat Jahan Eva		
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Project Title: Handwritten digit recognition using Convolutional Neural Network(CNN)

Project Description:

The purpose of this project is to design and develop a handwritten digit recognition system using a Convolutional Neural Network (CNN). The system will classify handwritten digits (0-9) from image pixel data. A supervised learning approach will be used, where the CNN model will be trained with labeled examples of handwritten digits.

CNN uses convolution and pooling operations to automatically learn important visual patterns from the input images, making it more accurate and efficient for image recognition tasks compared to a traditional artificial neural network. The project demonstrates core machine learning principles and deep learning concepts through complete mathematical implementation. This system can be applied in postal automation, bank check verification, document processing, and digitized form recognition.
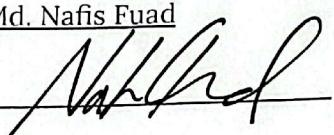
Key Features:

- Collects and preprocesses handwritten digit dataset
- Implements convolution operation for feature extraction
- Applies pooling layer to reduce feature dimensions
- Flattens feature maps for fully connected layer input
- Uses activation functions to introduce non-linearity in learning
- Implements forward propagation for multi-class prediction
- Performs gradient descent based backpropagation for weight updates
- Trains the model with labeled handwritten digit samples
- Tests the trained model and predicts handwritten digits (0-9) with improved accuracy

Languages or Tools to be used:
C++ programming language, IDE for coding (visual studio) and Github for version control.

Supervisor's Name: Mridha Md. Nafis Fuad

Signature of the Supervisor: _____

Date: 10/11/2025

Before the Midterm Presentation,

I confirm that the progress is satisfactory and I am forwarding it for midterm presentation.

Signature of the supervisor: _____

Date: _____

Proposal Presentation Feedback:

For bank check verification, there are additional 4 symbols which can also be recognized.

13/11/25

Midterm Presentation Feedback: