

NORTH EAST UNIVERSITY BANGLADESH

Department of Computer Science & Engineering

Project Proposal: Deep Learning-Based Image Classification Web App

Submitted By:

Bishop Roy Akash

Reg. No.: 0562220005101201

Semester: 7th

Abid Khan

Reg. No.: 0562210005101012

Semester: 7th

Submitted To:

Razorshi Prozzwal Talukder

Lecturer, Dept of CSE

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Abstract:

This project proposal focuses on developing a deep learning-based image classification web application using CNN and Streamlit. The objective is to create a user-friendly system that classifies images accurately and is accessible via a web interface.

Project Proposal: Deep Learning-Based Image Classification Web App

1. Project Title:

Deep Learning-Based Image Classification Using CNN and Streamlit

2. Introduction:

This project focuses on building an image classification web application using deep learning. The model is trained on a dataset of images and deployed as a web-based application using Streamlit. The system allows users to upload an image and get a classification result instantly.

3. Objectives:

- Implement a deep learning-based image classification model using CNN (Convolutional Neural Network).
- Preprocess image datasets for efficient training.
- Train and evaluate the model for accurate predictions.
- Develop a user-friendly web interface using Streamlit.
- Deploy the application on a local server or Streamlit Cloud for public access.

4. Technologies Used:

- **Deep Learning Framework:** TensorFlow/Keras
- **Programming Language:** Python
- **Web Framework:** Streamlit
- **Data Handling:** NumPy, Pandas
- **Visualization:** Matplotlib, OpenCV
- **Deployment:** Localhost (Streamlit run) / Streamlit Cloud (Online Hosting)

5. Methodology:

- **Data Collection & Preprocessing:** Image dataset preparation, resizing, normalization.
- **Model Development:** Build a CNN model from scratch and train it using TensorFlow/Keras.
- **Model Evaluation:** Evaluate performance using accuracy, precision, and recall.
- **Web App Development:** Implement an interactive UI using Streamlit for image upload and classification.
- **Deployment:** Deploy locally first, then on Streamlit Cloud for wider accessibility.

6. Expected Outcomes:

- A trained deep learning model capable of classifying images accurately.
- A functional web application where users can upload images and receive classification results.
- A successful deployment of the application for public or private access.

7. Conclusion:

This project aims to provide a fully functional deep learning-based image classification system with a simple web interface. By leveraging CNN and Streamlit, the solution is both powerful and user-friendly. The deployment on Streamlit Cloud ensures accessibility without the need for costly cloud services.
