DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING -DATA SCIENCE
MAJOR PROJECT ABSTRACT

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TITLE OF THE PROJECT: Bitcoin Price Forecasting using LSTM Networks
DOMAIN: Medical Imaging & Computer Vision in Healthcare
DEPARTMENT NAME- CSE(DATA SCIENCE)
YEAR & SECTION - 4th Year - A section

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ABSTRACT :

Enhanced Multi-Class Skin Cancer Detection using an Interpretable Deep Learning System with Integrated Web Deployment

Introduction

This project presents an advanced deep learning system designed to improve the accuracy and reliability of skin cancer detection. It addresses critical limitations found in existing research, such as poor model generalization, dataset class imbalance, and a lack of model interpretability. The system leverages a comprehensive, large-scale dataset created by combining images from the HAM10000 and ISIC 2019 archives. This unified dataset is meticulously preprocessed and balanced through strategic oversampling to mitigate bias and ensure equitable learning across different lesion types.

The core of the system is a high-performance deep learning model built using the EfficientNetB0 architecture with a transfer learning approach. This model is fine-tuned to classify skin lesions as either malignant or benign, achieving high accuracy with superior computational efficiency. To build clinical trust, a key feature of this system is the integration

of Explainable AI (XAI) using Grad-CAM. This technique generates visual heatmaps that highlight the specific regions of a lesion that drive the model's prediction, providing a transparent, evidence-based rationale for its diagnosis. The resulting system is a robust and scalable decision-support tool that can assist dermatologists in the timely and accurate detection of skin cancer.

The project is developed using **Python** as the primary programming language. The deep learning model is built using the **TensorFlow** and **Keras** libraries, which provide a powerful and user-friendly interface for building and training neural networks. For data management and manipulation, we use **Pandas** and **NumPy**, while **Scikit-learn** is used for splitting the dataset and evaluating model performance. The entire pipeline, from data preparation to model inference, is designed to be runnable within a standard development environment.

Keywords:
Deep Learning, Skin Cancer, Convolutional Neural Networks, Transfer Learning, Explainable AI, Grad-CAM, Medical Imaging, Class Imbalance, ISIC, HAM10000, TensorFlow, Keras, Python.

STUDENT SIGNATURE

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GUIDE SIGNATURE PROJECT

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