INFORMATICS INSTITUTE OF TECHNOLOGY

INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER

MPox Click- Monkeypox Detection System using Image Processing.

A Project Proposal by

Ms. Senethma Wickramasinghe

Supervised by

Mr. Bilal Rifas

Submitted in partial fulfilment of the requirements for the BEng in Software Engineering degree at the University of Westminster.

May 2023

Abstract

Monkeypox is a rare but potentially fatal viral disease that affects both humans and animals. The lack of an accurate and efficient detection system has made it difficult for public health professionals to diagnose and treat the disease in a timely manner. The study will explore the potential of using images of skin lesions, which are a key diagnostic feature of monkeypox, to develop predictive models that can aid in early diagnosis and treatment of the disease. To address this problem, we propose a deep learning-based approach that utilizes Convolutional Neural Networks (CNNs) to classify Monkeypox images.

Our proposed Monkeypox detection system consists of a custom CNN architecture that consists of multiple convolutional and pooling layers to extract and learn relevant features from the input images. We also employed transfer learning to improve the model's accuracy and reduce the risk of overfitting. The CNN was trained on a large dataset of Monkeypox images, which were preprocessed using various techniques, such as image normalization and data augmentation.

In our experiments, we evaluated the performance of our proposed Monkeypox detection system using various data science metrics, such as accuracy, precision, recall, and F1 score. Our results demonstrate that the proposed CNN-based approach achieved high levels of accuracy and outperformed existing state-of-the-art methods. These results demonstrate that the CNN model achieved high accuracy and sensitivity in predicting monkeypox from skin lesion images. Specifically, the CNN model achieved an overall accuracy of 93%, sensitivity of 93.3%, and specificity of 93%. Overall, our proposed Monkeypox detection system has the potential to help public health professionals diagnose and treat Monkeypox in a timely and accurate manner, particularly in resource-limited settings where traditional diagnostic methods may be unavailable or costly.

Keywords: Monkeypox disease, Image Processing, Convolutional Neural Networks (CNNs), Deep Learning, Diagnosis, Classification, Public Health, Data Science, Machine learning,