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***Abstract*—Monkeypox is a viral disease that affects both animals and humans.Monkeypox can have a substantial negative influence on human health, particularly in areas with a lack of healthcare services. The sickness can produce epidemics, and it might be difficult to stop the spread of the disease. For effective treatment and to stop the disease from spreading further, early identification and detection of monkeypox are essential. Therefore, the healthcare industry may benefit from the development of precise and effective methods for the detection of monkeypox, such as image classification.In this paper, we propose a novel approach for detecting Monkeypox using image classification. The proposed method utilizes a Transfer Learning Model and other machine learning models to classify images of patients with Monkeypox. The system employs a majority voting technique to improve the accuracy of the classification. The proposed system is evaluated using a dataset of images obtained from patients with Monkeypox, and the results show that the proposed approach achieves high accuracy in detecting Monkeypox. The proposed system has the potential to assist healthcare professionals in diagnosing and treating patients with Monkeypox, and it can contribute to the efforts of controlling the spread of the disease.**

***Keywords—Classification,Deep Learning,Transfer Learning, ensemble Learning,Monkeypox***

# I. INTRODUCTION

Monkeypox is a rare viral disease that is similar to human smallpox but less severe. It belongs to the Orthopoxvirus genus and family of Poxviridae. When epidemics hit monkeys maintained for study in 1958, the illness was first recognized. The Democratic Republic of the Congo (formerly Zaire) reported the first human case of monkeypox in 1970. Since then, occasional cases and outbreaks have been documented in various African nations, the United States, the United Kingdom, and Singapore.

Human monkeypox symptoms resemble smallpox symptoms but are less severe. Fever, headache, muscle aches, backache, swollen lymph nodes, chills, and weariness are the first symptoms of the illness. After that, a rash appears, frequently first on the face before moving to other regions of the body. The rash evolves and passes through various stages before developing a scab and eventually falling off. The disease typically lasts 2-4 weeks, and the majority of patients recover completely. However, the illness can occasionally be deadly or seriously debilitating, especially in those with compromised immune systems.For those with low immune systems or those who have not received the smallpox vaccine, monkeypox can be a deadly illness. Monkeypox does not now pose a significant hazard to public health on a par with COVID-19.In the future, it's feasible for a virus like the monkeypox or another infectious agent to start a pandemic like COVID-19. Changes in human behavior, climatic and environmental changes, as well as a rise in international travel and commerce, are just a few of the numerous elements that might lead to the genesis and spread of a new illness.

Viruses may also change and adapt over time, which might increase their virulence or ability to spread. This is why it's crucial to keep an eye on new infectious illnesses, investigate them, and create plans to stop and stop their spread.

AI classification of the monkeypox illness is crucial for a number of reasons. AI can assist in the early identification and categorization of monkeypox cases, which will speed up and increase the precision of diagnosis and treatment. This may be particularly crucial in areas with poor healthcare access or limited resources.

For a variety of reasons, classifying monkeypox using image classification AI can be crucial. Skin lesions and fever are symptoms of the viral illness known as monkeypox, which can be challenging to differentiate from illnesses including chickenpox, smallpox, and measles. Based on clinical and epidemiological information, such as the appearance and location of skin lesions, image classification AI can assist healthcare workers in effectively diagnosing and classifying instances of monkeypox.

To categorize photos of monkeypox skin lesions, we used three machine learning algorithms and transfer learning. A pre-trained neural network is utilized as the foundation for a new neural network that is trained on a particular task in the transfer learning approach. For our model, we started with the Xception pre-trained neural network.

Our research's primary contributions are:

1) Using machine learning and transfer learning techniques to accurately classify monkeypox skin lesions from photos.

2) Analyzing the performance of three machine learning techniques on the monkeypox dataset: support vector machines (SVMs), k-nearest neighbors (KNN), and random forest (RF).

3) Evaluating the three machine learning methods and 1 transfer learning method for categorization

4) Demonstrating how majority voting may be used to combine the predictions of various algorithms, considerably enhancing classification reliability and accuracy.

# II. LITERATURE REVIEW

// other peoples research

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*a**b* 

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##### References

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