**ABSTRACT**

In Bangladesh potato is one of the major crops. Potato cultivation has been very popular in Bangladesh for the last few decades. But potato production is being hampered due to some diseases which are increasing the cost of farmers in potato production. However, some potato diseases are hampering potato production that is increasing the cost of farmers. Which is disrupting the life of the farmer. An automated and rapid disease detection process to increase potato production and digitize the system. Our main goal is to diagnose potato disease using leaf pictures that we are going to do through advanced machine learning technology. This paper offers a picture that is processing and machine learning based automated systems potato leaf diseases will be identified and classified. Image processing is the best solution for detecting and analyzing these diseases. In this analysis, picture division is done more than 2034 pictures of unhealthy potato and potato's leaf, which is taken from openly accessible plant town information base and a few preprepared models are utilized for acknowledgment and characterization of sick and sound leaves. Among them, the program predicts with an accuracy of 99.23% in testing with 25% test data and 75% train data. Our output has shown that machine learning exceeds all existing tasks in potato disease detection.