

**MOI UNIVERSITY**

**SCHOOL OF AEROSPACE SCIENCE COMPUTING, STATISTICS AND PHYSICAL SCIENCES**

Department of Statistics and Computer Science

**INFORMATION SYSTEM SECURITY**

**COURSE CODE: COM 323E**

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**TASK: RESEARCH PROJECT**

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DEEP LEARNING TO TRAIN ON CROP DISEASE DETECTION

ABSTRACT

The aim of the project is to create a Deep Learning Model of machine learning and train it for crop diseases to enable early crop diseases detection through a publicly accessible API where images can be uploaded by a farmer and the model responds with a response containing the type of disease and possible treatment routines. However, this project sorely focuses on the deep learning model and dataset analysis. Taking advantage of the increased use smart phone and better network coverage the need to have agricultural extension services readily available to farmers 24/7. The system should be robust enough to handle different image formats and encodings. It is also an observation that as the model gets more refined it can be exploited with more data to show regions affected by certain diseases and pests across the country as well as the seasons when the disease peaks and possibly help mitigate these effects of crop diseases.

There is room for a web based API though at this juncture it is not within my scope I only intend to focus on the possibility of the deep learning model to accurately predict a crop disease when supplied with a plant leaf image.

This research project is supplied as a fulfilment of my Bachelors of Science Computer Science at Moi University in the School of Science and Aerospace Studies.

INTRODUCTION

I have lived in Trans Nzoia County for a while being the bread basket of the Country I have also been involved in small scale as well as large scale farming there seems to be a myriad of challenges that farmers face most of which are beyond our control from climate change to Soil Fertility Loss but amongst them is the effects of crop diseases for example in Cherangany Hills Potatoes do very well due to the cool and humid climate but they get poor produce due to blight that can affect the plant anytime during the season as such they blindly keep spraying the crops to safeguard and sometimes they over-spray.

In Trans Nzoia once the Planting Season starts it’s a marathon against time since a delay will cost farmers thousands if not millions either due to cross pollination from seed maize that affects the normal variant or from pests or from weeds and most definitely loss due to crop disease despite the seed companies working on disease resistant maize most of the farmers make their own seed choosing to hoard a portion of their produce for the next season.

In light of all these challenges there is a way we can help the farmers keep their crops healthy avoid over reliance on chemicals and use them only when necessary and stop once they have done their job. As such there needs to be a way to collaborate with farmers so as to ensure healthy crops and healthy produce.