Mobile Application for Diagnosis of Anthracnose in Beans

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DECLARATION

I Nabwire Lucy declare that this report document and its content as a whole have never been presented before by any one for any academic award or media presentation in any institution.

I go on to say that I have compiled it myself while referring to information from relevant sources as acknowledged in the document.

Signature: ……

Name: ……

Date: ……...

APPROVAL

This is to approve that this project report for the development of an android application that can diagnose bean Anthracnose and give the necessary control measures has been validated for further examination by the project supervisor as undersigned here.

Supervisor: Ms. Owomugisha Godliver

Signature: ……...

Date: ……...

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LIST OF ACRONYMS AND ABBREVIATIONS

GDP:	Gross Domestic Product
SVC:	Support vector clustering
KNN:	K-Nearest Neighbors
HSV:	Hue Saturation Value
SVM:	support vector machines
MATLAB:	Matrix Laboratory
GLCM:	Gray-Level Co-Occurrence Matrix
YCbCr:	Green (Y), Blue (Cb), Red (Cr)
RGB:	Red, Green, and Blue
IDE:	Integrated Development Environment
OS:	Operating System
PHP:	Personal Home Page

ABSTRACT

The mobile application for diagnosis of anthracnose in beans is designed in such way that the client does not require much technical knowledge to operate it. The instructions are pretty straight forward and will lead the user to the desired solution within short time. This automated system is combined of press and send techniques. Farmers or users will take image using mobile phones and send it to server via mobile application. In server, the image will be analyzed based on visual and textural attributes using different image processing algorithms and the system will yield the disease name which will be sent to the mobile application on the client's end.

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CHAPTER ONE

1.1 BACKGROUND

The agricultural sector is important to the Ugandan economy since that it employs approximately 72% of the population, contributes about 23.6% of GDP in 2016 and 46 percent of export earnings [1]. According to the economic outlook, the sector has the potential to transform the economy of Uganda in general and that of specific sectors such as manufacturing and services [2]. Uganda produces a wide range of food products including: coffee; tea; sugar; livestock; edible oils; cotton; tobacco; plantains; corn; beans; cassava; sweet potatoes; millet; sorghum; and groundnuts[1].

Beans are one of the most widely grown food crops together with banana, cassava and maize. Beans provide 25% of the total dietary calorie intake and 45% of the protein intake [3]. They also provide essential micronutrients and vitamin B. Beans have become also a major source of income for farmers and traders. This is partly because beans have a short growing cycle and adaptability to a wide range of conditions but also because there is increasing demand from both the domestic and export markets especially Kenya. Production is dominant in the Central, Eastern and Western regions and dominated by smallholder farmers with average plot sizes of one acre per household [4]. Despite the wide scale production of beans, they are affected by a number of diseases.

Diseases of beans include those caused by fungi such as: angular leaf spot caused by Phaeoisariopsis griseola; anthracnose caused by Colletotrichum lindemuthianum, and bean rust caused by Uromyces appendiculatus. Diseases caused by bacteria include: common bacterial blight caused by Xanthomonas axonopodis pv. phaseoli and halo blight caused by Pseudomonas syringae pv. Phaseolicola. Viruses, especially the bean common mosaic virus, continue to limit production levels [5].

Bean anthracnose a seed-borne disease caused by *Colletotrichum lindemuthianum* is one of the most widespread and economically important diseases, found mainly in tropical and subtropical bean-growing regions of the world. In Uganda Bean anthracnose is the most dangerous disease in beans because it’s unknown to many farmers as Most farmers see the symptoms of the disease and think that heavy rains are killing their beans [6]. Yield losses due to bean anthracnose can reach

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