RUAHA CATHOLIC UNIVERSITY

FACULT OF INFORMATION AND COMMUNICATION

TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE TITLE: RESEARCH METHODS

COURSE CODE: RCS 311

LECTURER NAME: TUMAINI EDGAR

SUBMISSION DATE: 12/12/2025 (09:00 MORNING)

NATURE OF WORK: INDIVIDUAL ASSIGNMENT

NO	STUDENT NAME	REGISTRATION NUMBER
01.	MESHACK ISAYA MATANDALA	RU/BSCSE/2023/078

QUESTION:

Description

From the previous session, take any paper from Google Scholar of your choice and answer the following question 1. Summarize the Introduction 2. The name of the paper with the author's name 3. Summarize the problem statement 4 Provide the objectives 2. Summarize the problem statement 3. Provide the gap of the paper

Introduction

Many new urban farmers do not know much about plant diseases. Most tools only say “healthy” or “diseased,” but they do not give clear details. Because of this, farmers cannot act early. This study aims to make a simple system that shows infected areas and gives short sentences explaining the disease.

2. Name of the Paper and Authors

Title: Crop Disease Diagnosis with Deep Learning-Based Image Captioning and Object Detection (2023)

Authors: 1.Dong In Lee,

2.Ji Hwan Lee,

3.Seung Ho Jang,

4.Se Jong Oh,

5. Ill Chul Doo

3. Problem Statement

a) What is Known

Most crop disease systems today only tell if a plant is “healthy” or “sick.” They do not give extra details about the disease.

b) Problem From the Known

Because the systems do not show the type of disease, the symptoms, or the infected area, new farmers cannot understand what is wrong. They fail to take action early, and the disease spreads.

c) Proposed Solution

There is a need for a simple system that gives clear information. The system should show the infected areas and write short sentences explaining the disease so farmers can act early.

4. General Objective

To develop a crop disease diagnosis system that gives clear information about plant diseases using image captioning and object detection.

5. Specific Objectives

1. To identify the type of crop disease from plant images.
2. To detect and show the infected areas on the plant image.
3. To create simple sentences describing the disease and its symptoms.
4. To help farmers take early action through easy-to-understand disease details.

6. Gap of the Study

(a) Past systems only gave basic classification without clear explanations.
Most of the earlier systems could only tell if a plant was healthy or sick. They did not explain what the disease was or how it affected the plant.

(b) There were very few systems that combined image captioning and object detection for crop diseases.
Very few tools used both image description and marking of affected areas. This made it hard for farmers to see exactly where the problem was.

(c) No simple tools existed to describe symptoms in short sentences.
Farmers needed easy-to-understand messages about the disease. But past systems did not provide short and clear explanations.

(d) This study fills the gap by giving marked infected areas and easy explanations to guide farmers.
Our project will show the sick parts on the plant and give simple descriptions. This will help farmers understand and take action quickly.