7.2.2 Property Representation in Proof of Concept (POC)

Performance

The POC should showcase the speed and accuracy of disease detection. A simulated or real-time dataset representing various crop diseases and healthy crops will be used for testing.

Metrics such as precision, recall, and F1 score will be employed to evaluate the performance of the detection algorithm.

The system's ability to handle varying sizes of datasets and adapt to different crop types will be demonstrated to ensure scalability and versatility.

Environment

The POC should be adaptable to different environmental conditions. The system will be tested in various climates, soil types, and lighting conditions to ensure robustness.

Integration with weather data APIs will be considered to demonstrate the system's capability to incorporate environmental factors into the disease detection process.

The system should be able to function in both controlled environments (such as greenhouses) and open fields, showcasing its applicability across different agricultural settings.

Actuators/Effectors

The POC may include simulated or prototype devices that can selectively apply pesticides or other treatments based on the identified diseases.

The POC should illustrate how the system communicates with actuators/effectors in real-time, providing timely and precise interventions to prevent the spread of diseases.

Sensors

The POC will incorporate various types of sensors, such as image sensors (for capturing visual data of crops), environmental sensors (for collecting climate and soil data), and possibly molecular sensors (for detecting specific disease markers at a molecular level).

The integration of these sensors will demonstrate the system's ability to gather comprehensive data, enabling accurate and early detection of crop diseases.

The POC should emphasize the seamless communication between the sensor array and the detection algorithm, ensuring a cohesive and efficient workflow.