UTM

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ASSIGNMENT 2

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State Space Search Formulation for Crop Disease Detection:

States:

State 1: Initial State

Description: The starting point of the system before any data is collected.

Components: No collected data, sensors inactive.

State 2: Data Collection

Description: Sensors collect raw image data from the field.

Components: Raw image data collected, sensors active.

State 3: Data Preprocessing

Description: Raw image data is preprocessed to enhance quality.

Components: Preprocessed data available, sensors still active.

State 4: Neural Network Analysis

Description: Convolutional Neural Networks (CNNs) analyze preprocessed data.

Components: Extracted features from the analysis.

State 5: Database Integration

Description: Comprehensive disease database is integrated.

Components: Neural network, disease database.

State 6: Training

Description: The neural network is trained with learned features and disease database.

Components: Trained model.

State 7: Disease Identification

Description: The trained model identifies and classifies diseases in real-time.

Components: Identified diseases

State 8: Real-time Monitoring

Description: Continuous monitoring and analysis of crop health.

Components: Real-time analysis.

State 9: User Interaction

Description: User interface provides insights and information.

Components: Actionable insights presented to users.

Actions:

Action 1: Activate Sensors

Transition: State 1 → State 2

Description: Sensors are activated to start the data collection process.

Action 2: Collect Data

Transition: State 2 → State 3

Description: Sensors collect raw image data from crops.

Action 3: Preprocess Data

Transition: State 3 → State 4

Description: Raw image data is preprocessed to enhance quality.

Action 4: Analyze with Neural Network

Transition: State 4 → State 5

Description: CNNs analyze preprocessed data to extract features.

Action 5: Integrate Database

Transition: State 5 → State 6

Description: Integrate a comprehensive disease database for training.

Action 6: Train Neural Network

Transition: State 6 → State 7

Description: Train the neural network with learned features and disease database.

Action 7: Identify Diseases

Transition: State 7 → State 8

Description: The trained model identifies and classifies diseases in real-time.

Action 8: Monitor in Real-time

Transition: State 8 → State 9

Description: Continuously monitor and analyze crop health in real-time.

Action 9: User Interaction

Transition: State 9

Description: Users interact with the system through a user interface to get insights.

This state space search formulation provides a structured representation of the sequential states and

actions involved in the crop disease detection system.