

Wireless Microclimate Sensor System for Smart PV Panel Control in Agrivoltaics

Goal: To design a sensor system composed of various climate sensors, develop a software program that collects and displays the data, create a scale model, and field test the system at a local vineyard

Part 1: User Stories

User Stories:

As an App User, I want to track the weather and environmental hazards and automatically receive notifications from the app when conditions become hazardous for the plants, so that I can plan in advanced ways to protect the crops.

As an App User, I want to monitor real-time graphs of sensor data from the fields through a dashboard, so that I can track weather and growth patterns of the plants.

As an App User, I want to control the angle of the solar panels in the canopy, so that I both provide optimal conditions to the plants below and continue to produce solar energy in the canopy above.

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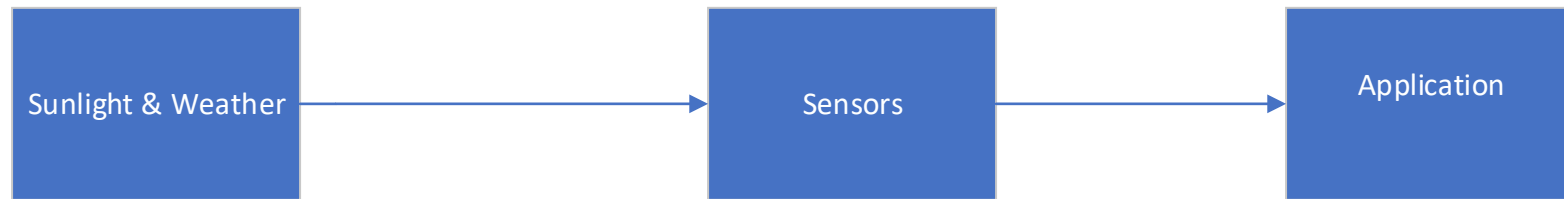


Figure 1. Design D0: The figure above shows the highest level view of our system, displaying the environmental conditions (sunlight and weather) as an input to the system and displaying the system application as the output.

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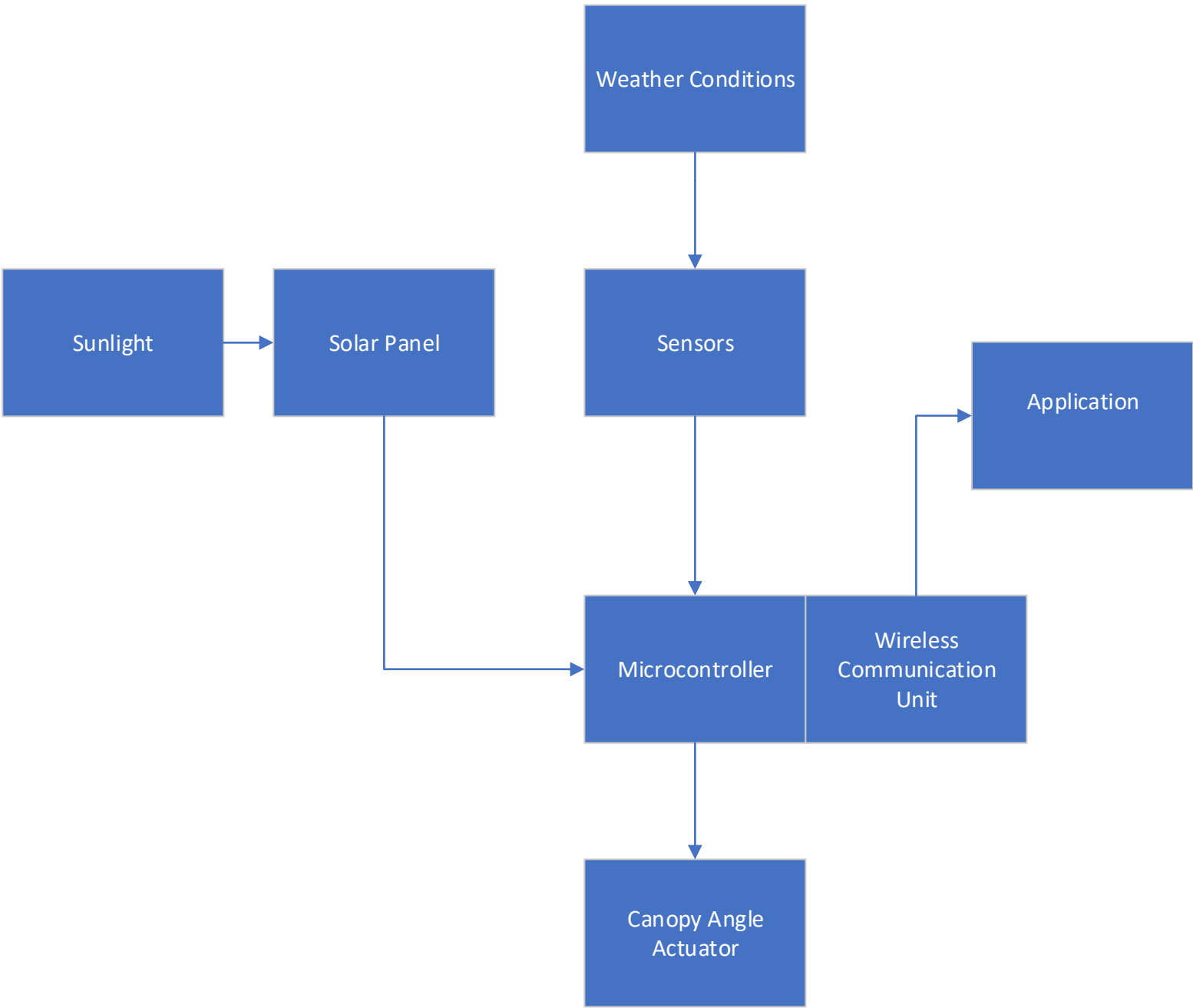


Figure 2. Design D1: The figure above shows a further elaboration on *Figure 1* displaying the interactions of the subsystems of the solar panels, sensors, microcontroller, and application.

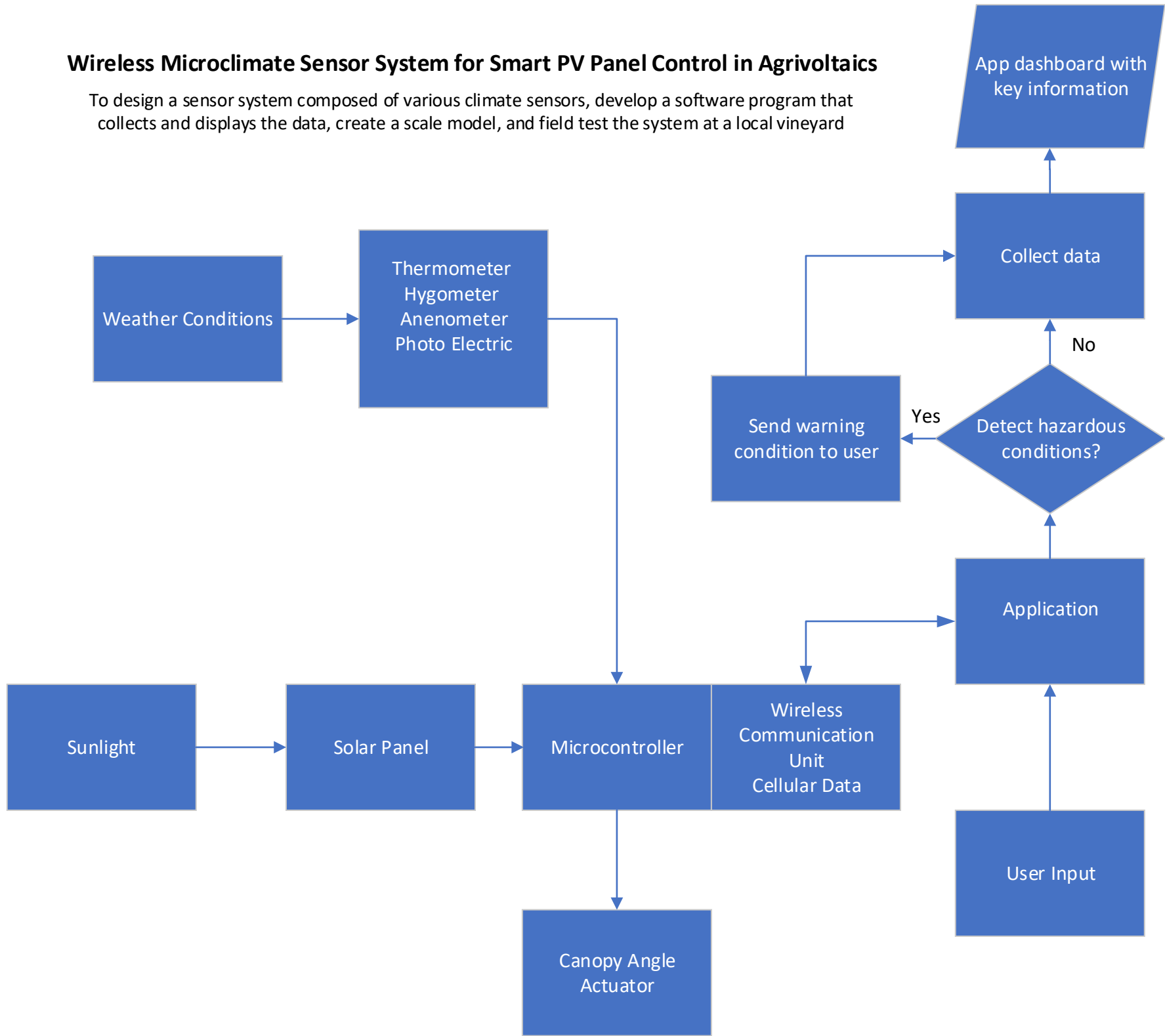


Figure 3. Design D2: The figure above displays the lowest level and most detailed diagram of our project's system. Adding on to *Figure 2*, it details the different types of sensors, the function of the application and interaction with the user.