**Growing Plants with the Power of Robotany**

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The goal of this project was to create a digital system to monitor the growth of a plant and regulate the environmental variables to optimize growing conditions. An Arduino system was used to read light, temperature, humidity, and soil moisture data, and to control a light source and a water source. A camera attached to the Arduino took pictures of the plant, which the server program analyzed to determine the health of the plant. It considered factors such as height of the plant, color, number of leaves, and size of leaves. The data was sent via Wi-Fi connection to a desktop restful server program, which stored and analyzed the data using C.A.R.T. decision trees. Each plant received its own decision tree that decided when to adjust watering and lighting schedule information and send it back to the Arduino.

An Android application pulled plant growth, health and sensor data from the server to display to the user. In addition, the application allowed the user to manually alter server variables and to score training data for the decision trees. Using these components, we successfully created a comprehensive and semi-autonomous system capable of plant health and growing environment management.