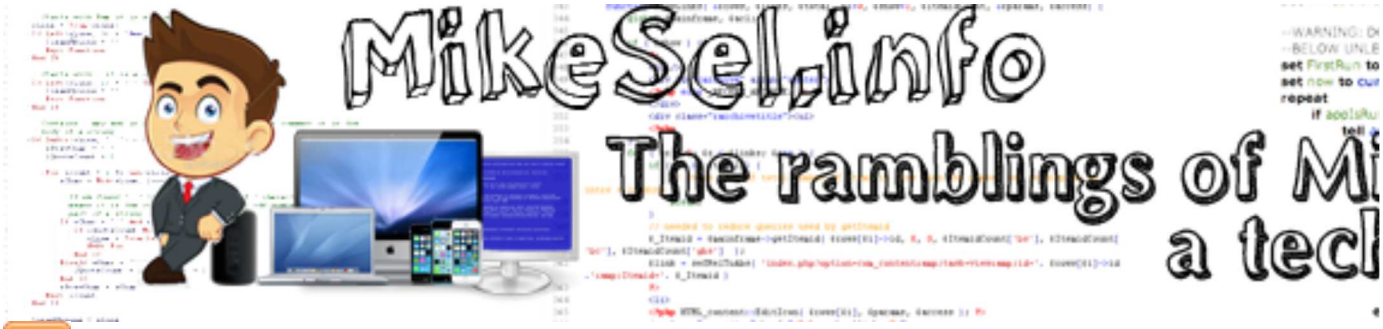

5 Raspberry Pi Projects to Automate Your Greenhouse

or Gardens

On January 15, 2013, in Blog, by GuestBlogger

Automating a greenhouse or a garden can be one of the more interesting and practical projects to get stuck in to at home. Our favorite projects that you can carry out on regular basis to automate a greenhouse are garden are discussed below. They are all driven with by Raspberry Pi mini-computers and integrated with additional gadgets and sensors through Arduino microcontrollers to ensure good functionality.

1. Computerized and Automated Grow box

Existing grow boxes have shortcomings that need to be rectified. For instance, they cannot control the temperature and are can only be used in small spaces. To overcome this, new software with temperature and moisture sensors can be used and using Arduino and a Raspberry Pi as the computer, the heat-emitting bulbs and full light incandescent bulbs can be integrated in a system and controlled separately. The system is very capable of controlling temperature and light in the greenhouse as well as sensing moisture levels using simple humidity sensors. You can also install a monitoring mechanism to detect the presence of wildlife around the green house and to monitor the growth of plants remotely.

2. Installing a moisture sensor

Moisture sensors can be made using two galvanized nails in the soil at a particular distance and connecting them with a conductor. An electric current can easily pass through if there is moisture and due to the fact that the level of moisture is hard to determine, you have to make sure that the moisture sensor is very accurate and efficient. You will also have to use the following:

- A soldering iron and wire
- A conducting wire
- The wire is soldered on to the PS2 controller

The simpler and more reliable answer might simply to get an off the shelf moisture sensor with a calibrated output.

3. Botanicalls

This is an Arduino project that you can buy from a local electronic shop. It is an integrated Ethernet port with plant moisture meter and tweets moisture monitor that

- An Ethernet module
- 5 resistors
- Two buttons
- Leaf shaped circuit board
- ATMEGA micro-controller chip
- A number of capacitors
- Metal probes
- Headers

To assemble the kit you follow instructions at the official Botanicalls site. By using the Botanicalls together with the components in the computer development kits, you will be able check the moisture level in the greenhouse or garden through your phone, although I'm quite sure whether I would want my plants nagging me on Twitter to water them.

4. Building an Indoor computerized Grow box

This build is a self-contained unit with a plant moisture sensor, soil moisture sensor, and temperature probe, so that the system can easily deal with extended periods of unattended care. The indoor grow box is created with enough room to withstand bigger plants. The following are some of the requirements:

Ceramic reptile heaters and advanced LED to provide both light and necessary heat for the grow box.

- A CPU fan
- A hosepipe and low pressure pump for watering purposes

If you are an expert at using different types of computer software, then this project will be very easy for you. By connecting your phone and other gadgets to Wi-Fi, you will be able to control the fan, the ceramic reptile heaters and a big enough water reserve would, theoretically, allow you to go on holiday without your plants dying from neighbors neglect. By adding a camera to the system, you could remotely observe and care for your plants from the other side of the country or the world.

5. Wireless Outdoor Camera for a Wildlife Project

Once the other parts are in place, you can add a few additional cameras into the system to watch for wildlife, either to prevent marauding vermin or to keep track of a rare species that might be in your area. A wireless, motion detecting Raspberry Pi to monitor all strange happenings around your greenhouse and garden is the perfect solution to this as it doesn't require you to have power and network cable all over your garden. Here's what you will need:

- Wireless LAN USB Adapter
- A USB webcam cinema
- 11000mAH External Battery Pack (or similar)
- Linux and Motion software

Once you have got all the parts together you have a complete package. A computer controlled greenhouse for tomato plants that could also deal with the sprinkler duty for your lawn is teamed up with a grow box for seedlings and cuttings. Your houseplants will automatically tell you if they need watering and whether you have groundhogs digging up your vegetables, or a bird nesting in a tree, you will always be up to date and informed.

The only thing you need is an excuse if you still manage to kill the plants.

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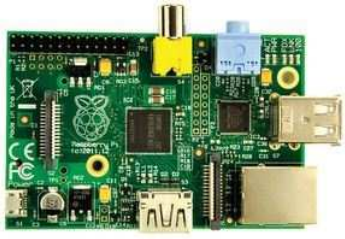
-  License: Image author owned
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Christopher Parkinson originally studied microprocessor design theory before testing phone lines and repairing faulty circuit boards for a couple of telco companies. His interest in electronics started at an early age when he used a screwdriver to open up a video game console to see how it worked. These days Chris is a home electronics enthusiast who enjoys tampering with the latest technology when not writing about the latest Raspberry Pi kits from Newark.

Last updated by GuestBlogger at January 15, 2013.

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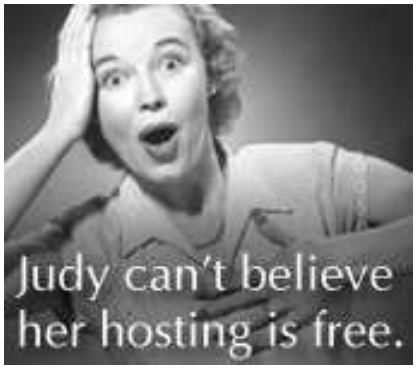

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