SBC Remote
Remotely controlling Raspberry Pis

J. Hunter Heard, Luke New, Siddhesh Singh, Peter Welsh, Jesse Lee, Don Powrie, Miguel Razo

Abstract
The project builds on top of emerging technology such as the Maker Modem, Weaved, and WebIOPi to remotely control single-board computers. An open source Android-based mobile application was developed to provide a UI which enables users to remotely manipulate the GPIO unit of a Raspberry Pi.

The mobile application integrates WebIOPi to let users control their Raspberry Pis remotely. The GUI contains a configuration screen that allows the user to change I/O signals. Additionally, the user will be notified when I/O signals change or some event occurs.

Results
The application starts with a login screen for Weaved. After the user logs in, a list of devices registered with the Weaved account will be shown. The user will then be able to pick their device from this list.

On selecting a pre-registered Raspberry Pi, the user will be presented with a control screen, from which s/he can flip switches. This is the main screen of the app, and the one that will be used most frequently.

The following is a list of the screens in the app:

- **Login**
  - Fields for entering username, password

- **Device Screen**
  - List of registered devices

- **Monitor & Control**
  - All pins on the Raspberry Pi
  - Real-time state of each pin
  - Switches for changing each pin’s state

- **Configuration**
  - App settings, with options for...
    - renaming pins
    - relabeling high and low states
    - setting each pin’s status to Monitor, Control, or Ignore
    - setting each pin’s natural state (high or low)

Architecture

Impact
Our project empowers Raspberry Pi owners who want to control their single-board computer on the go. With this app, anyone with a smartphone and internet access can monitor and control their Raspberry Pi’s GPIO ports remotely.

Because the project is open-source and Weaved registration is free, this will be a useful addition to the toolset available for Raspberry Pi owners.

Summary
The purpose of this project was to create a mobile app for remotely controlling the GPIO ports of Weaved-enabled Raspberry Pis via WebIOPi.

Our solution was to create an application that lets the user log in to Weaved, select their Raspberry Pi from the list of registered Pis, and configure the pins’ I/O states and their labels. Additional configuration allows the user to set each pin’s function to Control, which lets the pin switch on or off, Monitor, which will alert the user when the pin’s state changes, or Ignore, which will keep the pin hidden.

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