

**[0004]** Thus, there is a need in the art for simplifying microcontroller programming and expanding microcontroller capability while maintaining a minimal memory footprint.

## **SUMMARY OF THE INVENTION**

**[0005]** Embodiments of the present invention generally relate to a method, apparatus for automatic device program generation substantially as shown in and/or described in connection with at least one of the figures, as set forth more completely in the claims.

**[0005a]** According to a first aspect of the present invention, there is provided a computer-implemented method for automatic generation of a device program including: determining a controller from among a plurality of controllers displayed in a graphical user interface (GUI) on a user device communicatively coupled to a corresponding external controller; generating a user interactive pin layout in the GUI for the controller; displaying in the GUI, a plurality of operations for execution by the controller; determining an operation from among the plurality of operations for the controller; associating pins selected to parameters of the operation; receiving parameter data for the operation from at least one data entry field in the GUI; generating a program for the controller based on the user interactive pin layout, the received parameter data, the operation; and sending the program for storage in a memory on the external controller.

**[0005b]** According to a second aspect of the present invention, there is provided an apparatus for automatic generation of a device program, including: a display; a processor; and a memory comprising processor-executable instructions including: a visual controller module configured to: determine a controller among a plurality of controllers displayed in a graphical user interface (GUI) on the apparatus communicatively coupled to a corresponding external controller, generate a user interactive pin layout in the GUI for the controller, display in the GUI a plurality of operations for execution by the controller; determine an operation from among the plurality of operations for the controller, associate pins to parameters of the operation, receive parameter data for the operation from at least one data entry field

in the GUI, generate a program for the controller based on the user interactive pin layout, the received parameter data, and the operation, and sending the program for storage in a memory on the external controller.

**[0006]** These and other features and advantages of the present disclosure may be appreciated from a review of the following detailed description of the present disclosure, along with the accompanying figures in which like reference numerals refer to like parts throughout.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

**[0007]** So that the manner in which the above recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may be had by reference to embodiments, some of which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

**[0008]** Figure 1 is an overview diagram of the automatic device program generation system in accordance with one or more embodiments of the present invention;

**[0009]** Figure 2 is a diagram of an exemplary graphical user interface (GUI) for programming device specific hardware with interactive hardware visualization in accordance with one or more embodiments of the present invention;