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| C:\Users\Ali\Pictures\gui.jpg |
| GUIDO Manual  Graphical User Interface for Dynamic Operations Manual |
| |  |  |  | | --- | --- | --- | | Bob Abbey, Aliannea Sherman | 6/1/16 | South Pasadena Tournament of Roses | |

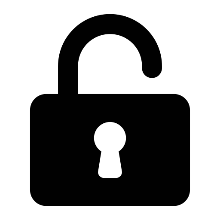
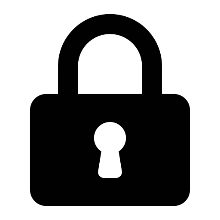
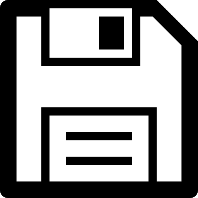
**GUIDO: Graphical User Interface for Dynamic Operations**

The purpose of this project was to convert the hydraulics control system used for animation of the South Pasadena Tournament of Roses floats from analog to digital. In doing so, programming of float animation was made to be user-friendly. Through GUIDO, users have the ability to designate the names and settings of 8 valves, customize runtime and delay time for each valve, save settings, and reload settings during the next use. The convenience of momentary functionality found in analog systems is conserved through the inclusion of a momentary mode, as well as having the added benefit of a summary page for quick overall-reference of valve settings.

There are 6 available options on the GUIDO home page: summary, edit, momentary, preferences, music, and information.

* **SUMMARY-** display current setting for each valve
* **EDIT-** customize hydraulic valve animation by setting run and delay times
* **MOMENTARY-** test the function of each valve individually
* **PREFERENCES-** customize the names of each valve and function
* **MUSIC-** upload music for playability during animation
* **ABOUT-** recent updates, access to manual, and acknowledgements

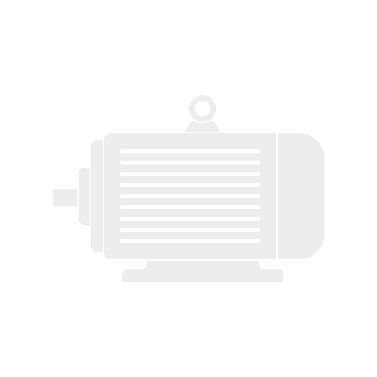
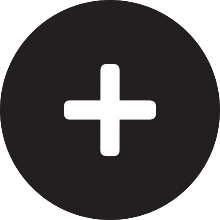
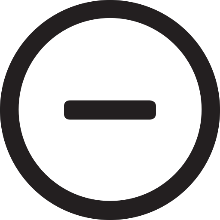
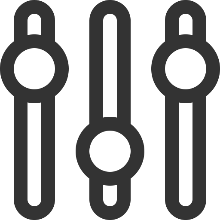
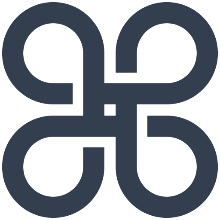
GUIDO was designed to be user-friendly, and should be fairly intuitive, however, this guide was written in order to provide further insight to curious individuals. The electrical engineer for this project was Bob Abbey, and the computer Programmer was Aliannea Sherman. This project could not have been made possible without Keenan Knaur, a computer science professor at California State University, Los Angeles and Justin Lacy, a professional programmer who aided in debugging and program functionality.



**SAVE and LOCK(ED)**

Areas of the user interface that are customizable (EDIT, PREFERENCES, MUSIC) include SAVE and LOCK(ED) features. In order for these areas to be customized, they must first be unlocked by clicking the lock button and entering the proper pin code. This feature was included in order to prevent animation settings from accidental changes. The same password is used through the interface, however, animation and momentary control do not need a password for execution.

After customization, changes will be committed and saved for further use via the SAVE feature. Saving current settings will result in customization throughout the interface, and reverting to a previous state is not possible.

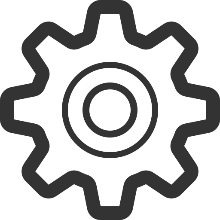
 

**GUIDO > EDIT**

The EDIT page is the core of the user interface, and allows programming of individual valves. Valves are listed by name and number. The RUN and DELAY columns are flanked by ‘-‘ and ‘+’ buttons which allow the user to increase or decrease the number of seconds a valve will be active or at rest. The minimum value available for either RUN or DELAY is 0, and the maximum is 99. For a valve named ‘BEAR’ that has the function to twist left and right, a runtime of 2 means that the bear will twist one way for 2 seconds. A delay time of 1 means that BEAR will pause for 1 second before twisting the opposite way for 2 seconds (runtime), before pausing again. During animation, these run and delay intervals will run in a continuous loop.

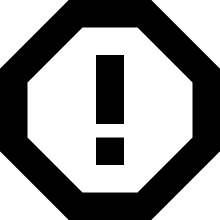
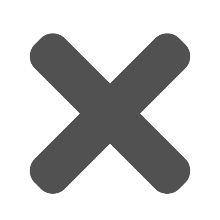
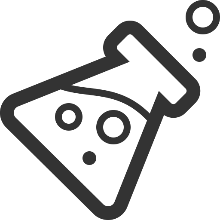
The MOTOR setting is used to indicate that the valve controls a motor. By clicking this setting, the valve will be turned on continuously during animation and will not experience any delays. The ADV setting is used to designate advanced valve function, such as valve pairing or complex run-delay intervals. When the motor setting is in use, advanced and interval options will be ignored.

Any valve that is assigned a runtime value of 0 will be listed as being inactive, and will not run during normal animation function.



**GUIDO > PREFERENCES**

The PREFERENCES page assumes there are two functions for each valve, and was included for improved usability. Each valve can be given a name, as can two functions for each valve. After unlocking the PREFERENCES page, clicking on a field causes a keyboard popup, which allows a user to enter the name of the valve or one of its functions in uppercase letters, with a maximum of six characters. Tapping outside of the text field closes the keyboard.



**GUIDO > MOMENTARY**

The MOMENTARY page allows toggle-based control of induvial valves. Each valve is listed by name and is accompanied by an A/B toggle used to switch between function A and B. The circle closest to the toggle imitates an indicator light, signaling that the function for that valve is running. The ‘X’ button ends valve function. A larger with an octagon and exclamation mark can be used to turn off all valves in use.



**GUIDO > MUSIC**

The MUSIC page allows a song to be selected for play during animation. In order to add music to the interface, a USB with the desired song must be inserted into the USB port, and this song can be selected using the file selector. By hitting SAVE, the selected song will be saved locally and used during animation. File formats include .mp4 and .wav. \*\*\*\* The USB must be removed after GUIDO is shut down to avoid damage to the USB or the system. \*\*\*\* Eject button?



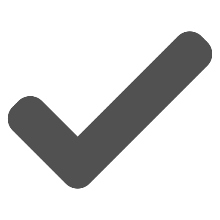
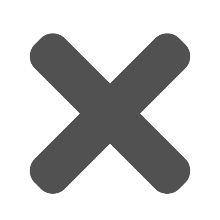
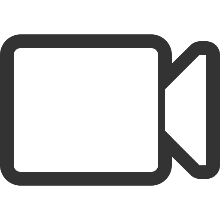
**GUIDO > INFO**

The INFO page provides secondary information about GUIDO, including recent updates, access to the manual, and acknowledgements.



**GUIDO > SUMMARY**

The SUMMARY page includes a list of all 8 valves and information such as valve name, functions, settings, and designated intervals for default settings. This page also provides a link to the RUN page.



**GUIDO > SUMMARY > RUN**

The RUN page is accessed through the SUMMARY page, and is used to start the animation. If a valve is to be in use, its corresponding button will read ‘ON’, otherwise the button will read ‘OFF’. Similar to the MOMENTARY page, colored circles serve indicate whether function of a given valve is being executed at a given time during animation. By clicking the START button, the animation will begin. To end the animation, click the button again. At this time, all valves will be turned off. Individual valves may be turned off during animation by clicking the corresponding ON button. The valve may not be turned back on unless the whole system is restarted.