



USER MANUAL

Painkiller Injection System

Group 16

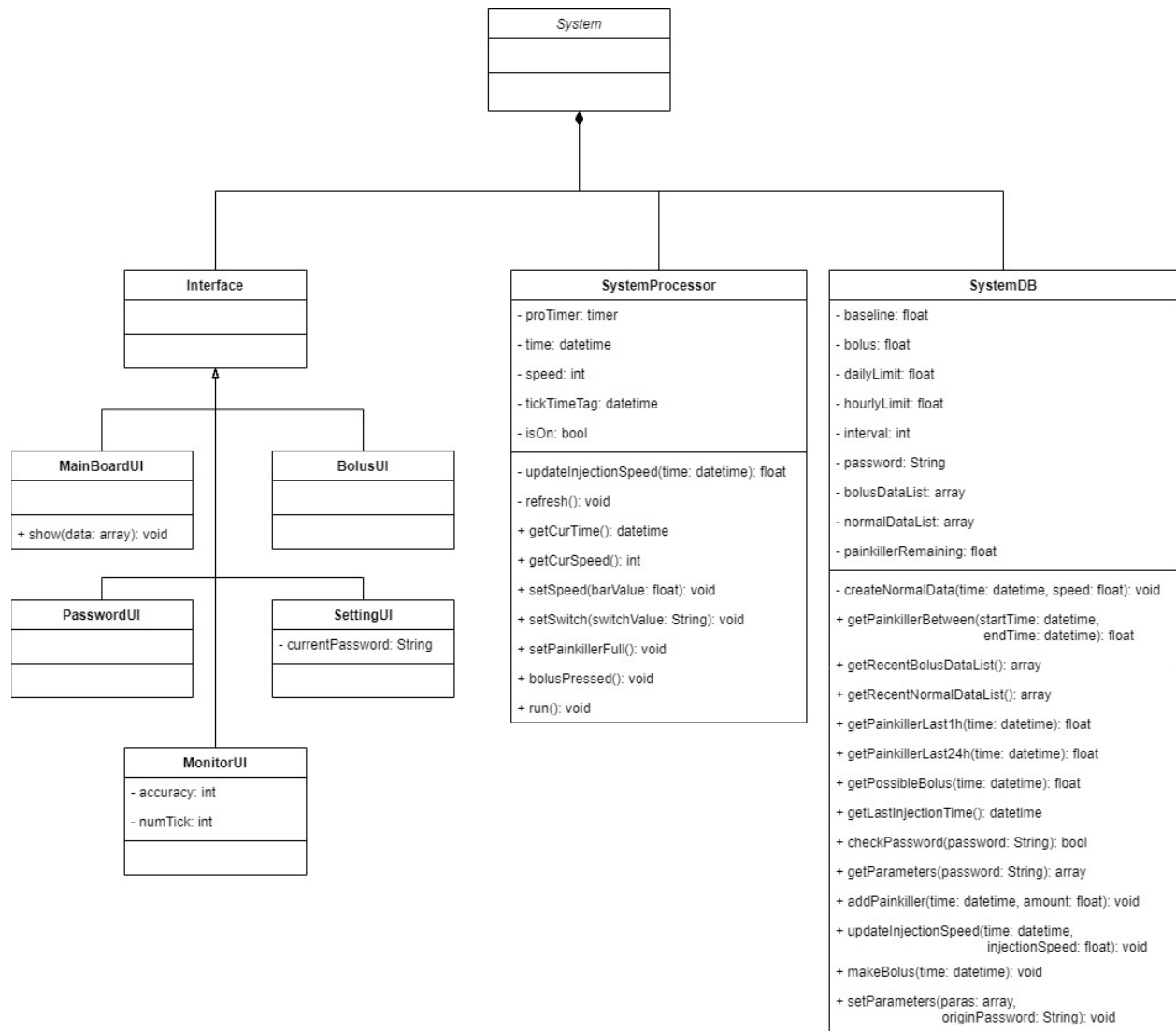
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System Architecture

The system architecture is shown below:



Physician Manual

Main Board

The physician using painkiller system has a Main Board UI which is shown below (Figure 1):

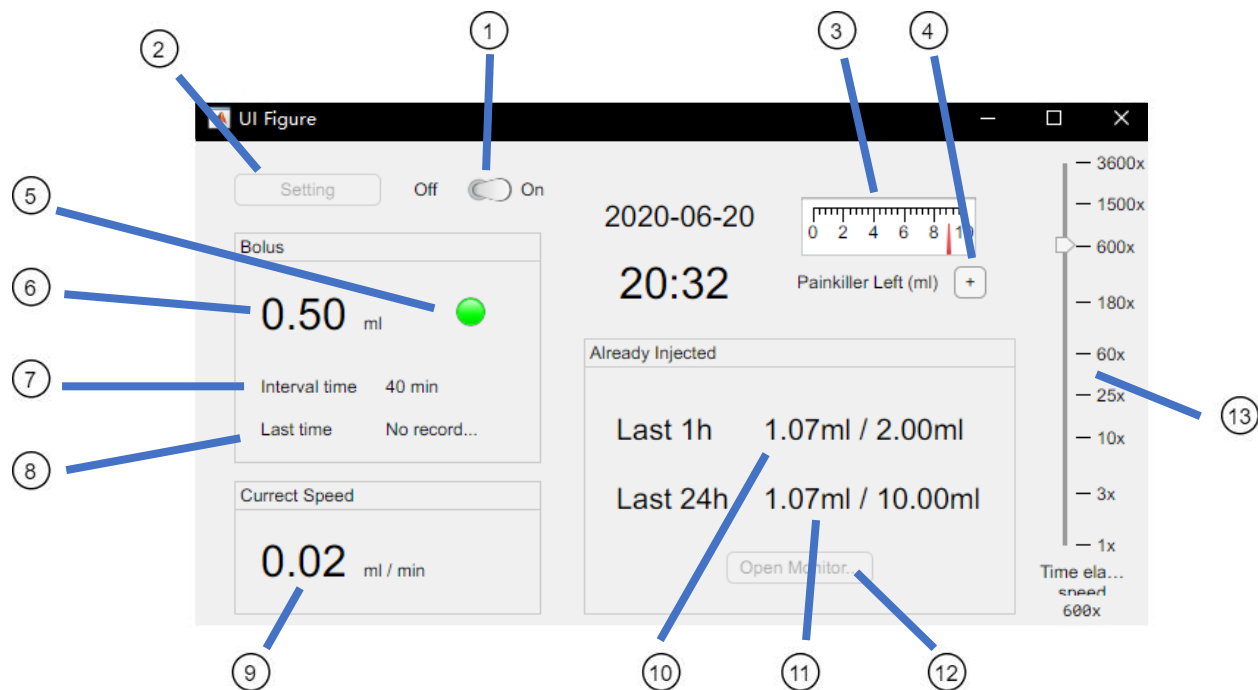


Figure 1

Main Board Components

- ① “Power on/off”. Turning on this switch will activate the painkiller injection system. Turning off this switch will de-activate the system.
- ② “Setting”. Clicking on this button will open the Password Board. After entering correct password, the Password UI will disappear and the Setting Board will be opened.
- ③ “Remaining Painkiller”. This gauge displays how much painkiller left in the system. A warning will be shown when painkiller is going to be run out (Figure 2).
- ④ “Refill Painkiller”. Clicking on this button will refill painkiller, which is used to simulate the real use case of refilling painkiller.
- ⑤ “Bolus Status”. This lamp shows the status whether a bolus can be injected. When it is green, a bolus can be injected. When it is red, a bolus cannot be injected.
- ⑥ “Bolus Amount”. It shows how much a bolus is set currently.
- ⑦ “Interval Time”. It shows at least currently how many time should be between two bolus injections.

- ⑧ “Last Bolus Injection Record”. It shows the time when the last bolus was injected. (There is no record as shown in Figure 1. In Figure 3, there is a record.)
- ⑨ “Baseline Speed”. It shows how fast baseline is set currently.
- ⑩ “Last One Hour Amount / One Hour Limit”. On the left side of “/”, it is how much painkiller has been injected in the last one hour. On the right side of “/”, it is the maximum amount of painkiller that can be injected in one hour.
- ⑪ “Last 24 Hours Amount / 24 Hours Limit”. On the left side of “/”, it is how much painkiller has been injected in the last 24 hours. On the right side of “/”, it is the maximum amount of painkiller that can be injected in 24 hours.
- ⑫ “Opening Monitor”. Clicking on this button will open the Monitor UI which can display the injection history and a “Injection Speed – Time” graph.
- ⑬ “Time speed”. Moving this slider will change the speed of time, which is used in simulation.

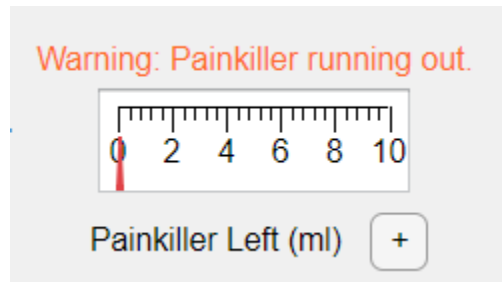


Figure 2

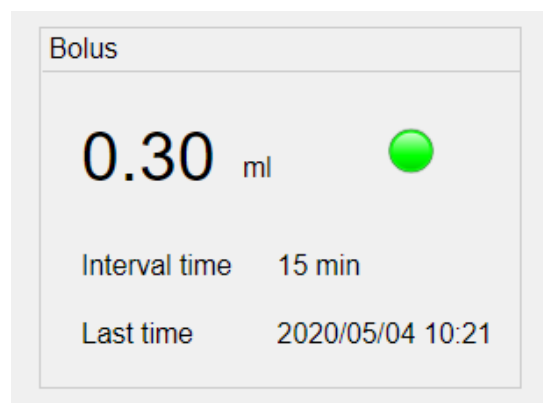


Figure 3

Password UI

After clicking “Setting” button on the main board, this Password UI will be shown (Figure 4).

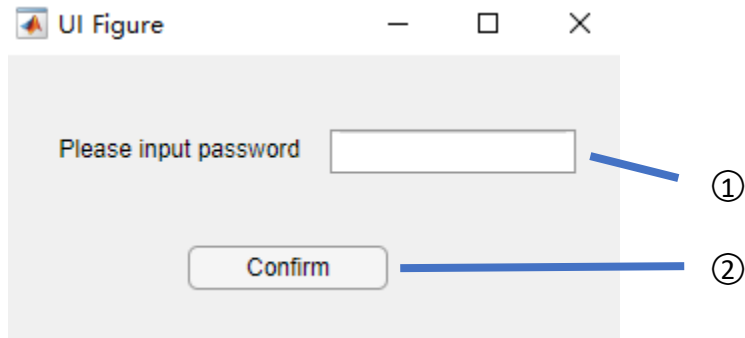


Figure 4

Password UI Components

- ① "Password Input Box". Password should be entered in here.
- ② "Confirm". Clicking on this button will check whether the password is correct. If correct, the Password UI will be closed and open the Setting Board. If wrong, a "Wrong Password" message will be shown (Figure 5).

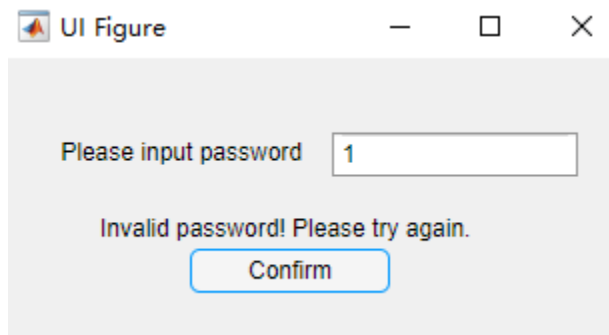


Figure 5

Setting Board

The physician can set system parameters using Setting Board UI which is shown below (Figure 6):

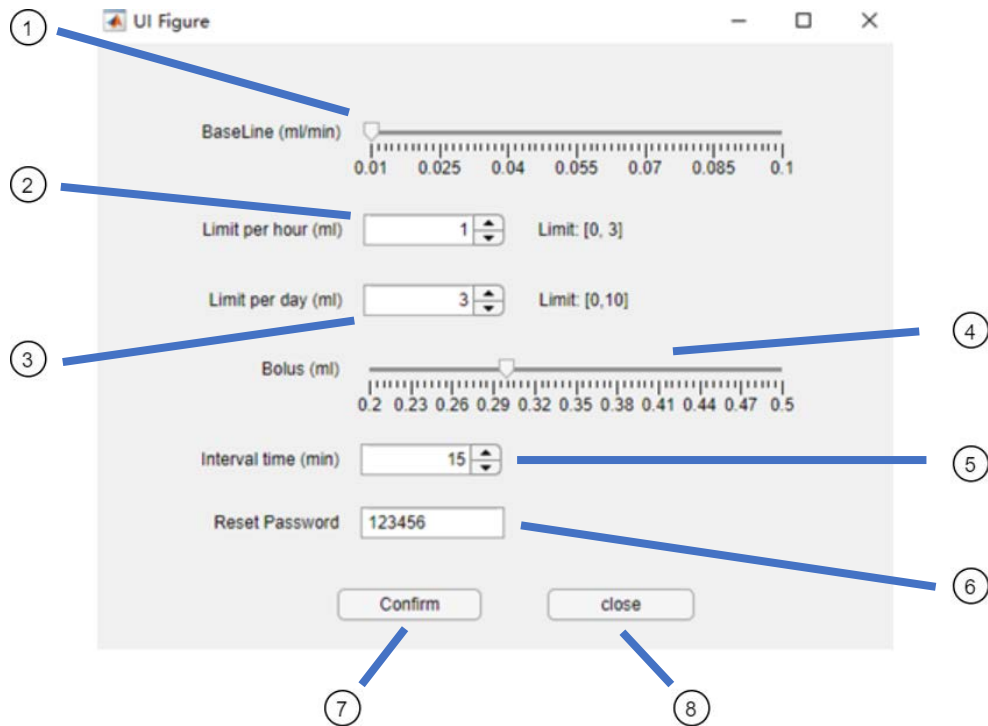


Figure 6

Main Board Components

- ① “Baseline”. Moving this slider will change the baseline injection speed.
- ② “Hourly Limit”. Clicking this spinner will change the maximum amount of painkiller injected in one hour.
- ③ “Daily Limit”. Clicking this spinner will change the maximum amount of painkiller injected in 24 hours.
- ④ “Bolus”. Moving this slider will change the amount of painkiller injected by one bolus.
- ⑤ “Lockout Interval”. Clicking this spinner will change the lockout interval time between two boluses.
- ⑥ “Reset Password”. New password should be entered in here.
- ⑦ “Confirm”. Clicking this button will save all the changes to system parameters and start to implement these parameters.
- ⑧ “Close”. Clicking this button will close the Setting Board.

Monitor Board

The physician can get painkiller injection history through Monitor Board which is shown below (Figure 7):

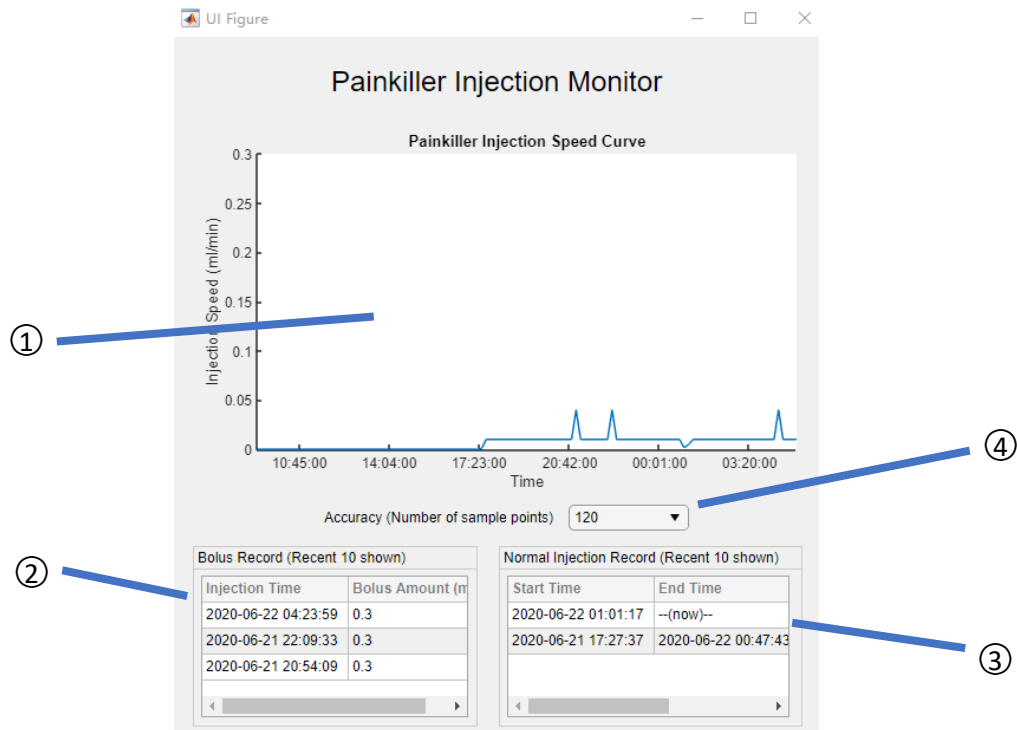


Figure 7

Monitor Board Components

- ① “Injection Speed – Time Graph”. This graph will display the relation between injection speed and time.
- ② “Bolus Record”. This table will display the records of the most recent 10 bolus injected.
- ③ “Normal Injection Record”. This table will display the records of start time and end time of the most recent 10 baseline injections.
- ④ “Accuracy”. Changing this dropdown menu will change the sample interval of the “Injection Speed – Time” graph.

Patient Manual

Bolus UI

The patient using painkiller system has a Bolus UI which is shown below (Figure 8):

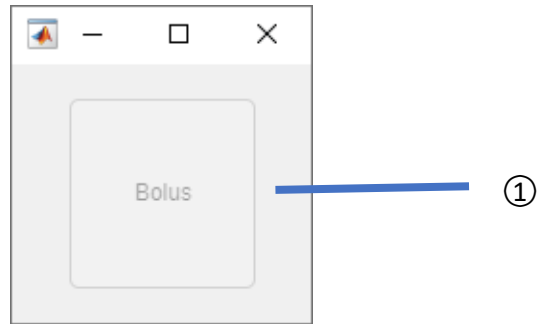


Figure 8

Bolus UI Components

- ① "Bolus". Clicking on this button will inject a bolus.