

Admin Panel

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Chapter 1

Admin Panel

The app to directly control the Sunfounder PiCar.

1.1 Install Packages:

```
pnpm i
```

1.2 Run:

```
pnpm run electron
```

1.3 Build EXE to export:

```
pnpm run preelectron-pack  
AND  
pnpm run electron-pack
```

1.4 Template from:

<https://github.com/soulehshaikh99/create-svelte-electron-app>

Chapter 2

App

```
` <script> import NavBar from "../lib/NavBar.svelte"; import Router from "svelte-spa-router"; import routes from "../routes"; </script>
```

```
<NavBar > <main> <Router {routes} /> </main>
```

```
<style> main { text-align: center; max-width: 240px; margin: 0 auto; height: 92vh; }
```

```
@media (min-width: 640px) { main { max-width: none; } } </style> ``
```


Chapter 3

BehaviourTreeHandler

```
` <script> import { Button, Card } from "flowbite-svelte";

import { behaviour_tree_xml_code, behaviour_tree_save_modal_code, show_behaviour_tree_save_modal,
behaviour_tree_list, } from "../store/behaviour_tree_store";

</script>

<Button on:click={() => { show_behaviour_tree_save_modal.set(true); behaviour_tree_save_modal_code.<←
set($behaviour_tree_xml_code); }} class="w-full my-3" color="green">Save Behaviour Tree</Button> <←
Card class="w-full max-w-full h-full max-h-full overflow-scroll my-4 gap-y-2" > {#each $behaviour_tree_list as
behaviour_tree} <Card class="w-full max-w-full grid grid-rows-2">

{behaviour_tree.name === "" ? "[Empty Name]" : behaviour_tree.name}

<Button color="red" on:click={()=>>{ api.removeBehaviourTree({uuid: behaviour_tree.uuid}); behaviour_tree_<←
list.set($behaviour_tree_list.filter((item) => item.uuid !== behaviour_tree.uuid)); }}>Remove</Button> <Button
color="blue" on:click={()=>>{ $behaviour_tree_xml_code = behaviour_tree.code; }}>Load</Button> </Card>
{/each} </Card> ``
```


Chapter 4

CodeBox

```
` <script> // If this does not work then try preview import CodeMirror from "svelte-codemirror-editor"; import { xml }
from "@codemirror/lang-xml"; import { oneDark } from "@codemirror/theme-one-dark";

import { node_hover, xml_schema } from "../CodeBox_Constants";

import { behaviour_tree_xml_code } from "../store/behaviour_tree_store"; import CodeMessagingBar from "../↵
CodeMessagingBar.svelte"; </script>

<CodeMessagingBar> <CodeMirror class="text-left h-full flex-auto font-mono text-lg font-bold" bind↵
:value={$behaviour_tree_xml_code} lang={xml(xml_schema)} tabSize={4} theme={oneDark} extensions=[[node_↵
hover]] > <style> .cm-editor { height: 90% !important; } .cm-editor * { font-family: ui-monospace, SFMono-Regular,
Menlo, Monaco, Consolas, "Liberation Mono", "Courier New" !important; } .cm-scroller { height: 100% !important; }
</style> ``
```


Chapter 5

CodeMessagingBar

```
` <script> import { selected_raspberry_pi_uuid } from "../store/raspberry_pi_store"; import xmlFormat from "xml-formatter"; import { behaviour_tree_xml_code } from "../store/behaviour_tree_store";

/** @type {string} */ let send_behaviour_tree_text = "Send Behaviour Tree";

/** @type {string} */ let send_behaviour_tree_color = "#50AA34";

/** @type {boolean} */ let send_behaviour_tree_debounce = false;

/** @type {string} */ let start_behaviour_tree_text = "Start Behaviour Tree";

/** @type {string} */ let start_behaviour_tree_color = "#89AAFF";

/** @type {boolean} */ let start_behaviour_tree_debounce = false;

async function sendBehaviourTree() { if (send_behaviour_tree_debounce) { return; } send_behaviour_tree_debounce = true; try { await api.sendBehaviourTree({ data: xmlFormat.minify($behaviour_tree_xml_code), }); send_behaviour_tree_text = "Sent Behaviour Tree!"; send_behaviour_tree_color = "#3457AA"; } catch (error) { send_behaviour_tree_text = "Unable to send Behaviour Tree!"; send_behaviour_tree_color = "#AA3434"; } setTimeout(() => { send_behaviour_tree_text = "Send Behaviour Tree"; send_behaviour_tree_color = "#50AA34"; send_behaviour_tree_debounce = false; }, 1000); }

async function startBehaviourTree() { if (start_behaviour_tree_debounce) { return; } start_behaviour_tree_debounce = true; try { await api.startBehaviourTree(); start_behaviour_tree_text = "Started Behaviour Tree!"; start_behaviour_tree_color = "#4277FF"; } catch (error) { start_behaviour_tree_text = "Unable to start Behaviour Tree!"; start_behaviour_tree_color = "#AA3434"; } setTimeout(() => { start_behaviour_tree_text = "Start Behaviour Tree"; start_behaviour_tree_color = "#89AAFF"; start_behaviour_tree_debounce = false; }, 1000); }

async function stopBehaviourTree() { await api.stopBehaviourTree(); } </script>

<button on:mousedown={sendBehaviourTree} class="p-2 rounded-lg shadow-lg relative inset-0" style="background-color: {send_behaviour_tree_color}; color: white; width: 100%; border: none; {$selected_raspberry_pi_uuid === " ? 'cursor: not-allowed;' : ''}" disabled={$selected_raspberry_pi_uuid === ""} >{send_behaviour_tree_text}</button> <button on:mousedown={startBehaviourTree} class="p-2 rounded-lg shadow-lg relative inset-0" style="background-color: {start_behaviour_tree_color}; color: white; width: 100%; border: none; {$selected_raspberry_pi_uuid === " ? 'cursor: not-allowed;' : ''}" disabled={$selected_raspberry_pi_uuid === ""} >{start_behaviour_tree_text}</button> <button on:mousedown={stopBehaviourTree} class="p-2 rounded-lg shadow-lg relative inset-0" style="background-color: #FF352F; color: white; width: 100%; border: none; {$selected_raspberry_pi_uuid === " ? 'cursor: not-allowed;' : ''}" disabled={$selected_raspberry_pi_uuid === ""} >Stop Behaviour Tree</button> ``
```


Chapter 6

Stream

```
` <script> import { onMount } from "svelte"; import { main_pane_size_0_store, lidar_toggle, } from
"../store/home_store"; import { camera_stream, lidar_stream } from "../store/websocket_store";
```

```
const lidar_wall_colour = "#0061FF"; const offset_angle = 45; const fps = 30; const fps_interval = 1000 / fps; let
lidar_bar_height_size = 20000;
```

```
/**
```

```
•
```


Chapter 7

IPList

```
` <script> import { Button, Card, Spinner, Tooltip } from "flowbite-svelte"; import { copy } from "svelte-copy";

import { websocket_server_port } from "../store/websocket_store";

if (api.getLocalIPList === undefined) { api.getLocalIPList = async function () { return new Promise((resolve) => {
  resolve([]); }); }; }

export let getIPList = updateIPList();

function refreshIPList() { getIPList = updateIPList(); }

function updateIPList() { return api.getLocalIPList().then((local_ip_list) => { let ip_list = []; console.log(local_ip_↵
list); for (const [ip_group_name, ip_group] of Object.entries( local_ip_list, )) { for (const ip of ip_group) { if (ip.family
=== "IPv4") { ip_list.push({ group_name: ip_group_name, address: ip.address, netmask: ip.netmask, mac: ip.mac,
internal: ip.internal, cidr: ip.cidr, }); } } } console.log(ip_list); return ip_list; }); } </script>

<Card class="p-6">
```

Local IP List

```
<Button class="mb-3" id="refresh_ip_address" on:click={refreshIPList} >Refresh IP List</Button> <Tooltip
triggeredBy="#refresh_ip_address" >Remember to determine the appropriate IP Address based on the Raspberry
Pi's network connection.</Tooltip>
```

```
{#await getIPList}
```

Loading IP List

```
<Spinner > {:then ip_list} <Card class="overflow-y-scroll h-screen gap-2 justify-center" style="padding:0px">
{#each ip_list as ip} <Card class="py-6 border-neutral-100 border-b border-t" style="padding:0.5rem">
```

```
{ip.group_name}
```

```
{ip.address}:{{websocket_server_port}}
```

```
<button use:copy={${ip.address}:${{websocket_server_port}}} class="mt-4 p-2" > Copy IP
</button> </Card> {/each} </Card> {/await} </Card> ``
```


Chapter 8

NavigationBar

```
` <script> import { DarkMode, Navbar, NavLi, NavUI, NavHamburger, } from "flowbite-svelte";

let btnClass = "text-gray-500 dark:text-gray-400 hover:bg-gray-100 dark:hover:bg-gray-700 rounded-lg text-xl p-2";
</script>

<Navbar style="height:7vh;"> <NavUI> <NavLi>  Home </NavLi> <NavLi>  Manage Websockets </NavLi> <NavLi>  Validate Behaviour Tree </NavLi> </NavUI> <NavHamburger class="lg:hidden"
> <DarkMode {btnClass} /> </Navbar> ``
```


Chapter 9

RaspberryPiConnectBanner

```
` <script> import { Banner, Button } from "flowbite-svelte"; import { ArrowRightOutline } from "flowbite-svelte-icons";  
</script>
```

```
<Banner class="border-2 z-20 flex-auto p-1 fixed bottom-3 rounded-lg bg-white dark:bg-gray-700 border-gray-500  
dark:border-gray-600" bannerType="info" style="left:50%; transform: translateX(-50%);"
```

Not Connected!

Connect the Raspberry Pi to the Admin Panel's websocket server by following instructions in the Websocket Tab.

```
<Button href="#/websocket" class="w-fit ml-3"> View Instructions <ArrowRightOutline > </Button>
```

```
</Banner> ```
```


Chapter 10

RaspberryPiSelector

```
` <script> import { Button, Card } from "flowbite-svelte";

import { raspberry_pi_uuid_list, selected_raspberry_pi_uuid, } from "../store/raspberry_pi_store";

/** @type {string} */ let selected_uuid = "";

async function connectToRaspberryPi() { if (selected_uuid === "") { return; } console.log(selected_uuid);
const selection_result = await api.selectRaspberryPi({ uuid: selected_uuid, }); console.log(selection_result); if
(selection_result.success) { selected_raspberry_pi_uuid.set(selected_uuid); } else { console.log(selection_result.↵
message); } } </script>
```

Raspberry Pi UUID List

```
{#each $raspberry_pi_uuid_list as uuid} <Card> <Button on:click={() => { selected_uuid = uuid; }} > {uuid} </↵
Button> </Card> {/each} <Card class="col-start-3 w-full ml-2">
```

Connect to Raspberry Pi UUID

```
<Button on:click={connectToRaspberryPi}>> {#if selected_uuid === ""} Select a Raspberry Pi UUID {else} Con-
nect to
[{{selected_uuid}}] {/if} </Button> </Card> ``
```


Chapter 11

SaveBehaviourTreeModal

```
` <script> import { Button, Input, Modal } from "flowbite-svelte";

import CodeMirror from "svelte-codemirror-editor"; import { xml } from "@codemirror/lang-xml"; import { oneDark }
from "@codemirror/theme-one-dark";

import { xml_schema } from "../CodeBox_Constants"; import { node_hover } from "../CodeBox_Constants";

import { show_behaviour_tree_save_modal, behaviour_tree_save_modal_code, behaviour_tree_list, } from
"../store/behaviour_tree_store";

let behaviour_tree_name = ""; </script>

<Modal title="Save Behaviour Tree" bind:open={$show_behaviour_tree_save_modal} autoclose

    Would you like to save this behaviour tree?

    <Input let:props> <input type="text" {...props} placeholder="Behaviour Tree Name:" bind:value={behaviour_↵
tree_name} required /> </Input> <CodeMirror class="text-left h-full flex-auto font-mono text-lg font-
bold" bind:value={$behaviour_tree_save_modal_code} lang={xml(xml_schema)} tabSize={4} theme={oneDark}
extensions=[[node_hover]] > <svelte:fragment slot="footer"> <Button on:click={() => { const behaviour_tree_↵
_save_state = { name: behaviour_tree_name, code: $behaviour_tree_save_modal_code, }; api.saveBehaviour_↵
Tree(behaviour_tree_save_state); behaviour_tree_list.set([ ...$behaviour_tree_list, behaviour_tree_save_state, ]);
}}> Yes</Button> <Button color="alternative"> No</Button> </svelte:fragment> </Modal> ``
```


Chapter 12

CodeBox

```
` <script> // If this does not work then try preview import CodeMirror from "svelte-codemirror-editor"; import { xml }
from "@codemirror/lang-xml"; import { oneDark } from "@codemirror/theme-one-dark";

import { node_hover, xml_schema } from "../CodeBox_Constants";

import { behaviour_tree_xml_code } from "../../store/behaviour_tree_store"; import CodeButton from "../Code↵
Button.svelte"; </script>

<CodeButton> <CodeMirror class="text-left h-full flex-auto font-mono text-lg font-bold" bind:value={$behaviour↵
_tree_xml_code} lang={xml(xml_schema)} tabSize={4} theme={oneDark} extensions=[[node_hover]] > <style>
.cm-editor { height: 90% !important; } .cm-editor * { font-family: ui-monospace, SFMono-Regular, Menlo, Monaco,
Consolas, "Liberation Mono", "Courier New" !important; } .cm-scroller { height: 100% !important; } </style> ``
```


Chapter 13

CodeButton

```
` <script> import xmlFormat from "xml-formatter"; import { behaviour_tree_xml_code } from "../store/behaviour_↵
_tree_store";

/** @type {string} */ let validate_behaviour_tree_text = "Validate Behaviour Tree";

/** @type {string} */ let validate_behaviour_tree_color = "#4C9CFF";

/** @type {boolean} */ let validate_behaviour_tree_debounce = false;

async function validateBehaviourTree() { if (validate_behaviour_tree_debounce) { return; } validate_behaviour_↵
_tree_debounce = true; try { validate_behaviour_tree_text = "Validating Behaviour Tree"; validate_behaviour_↵
_tree_color = "#4C23FF"; const result = JSON.parse(await api.validateBehaviourTree({ data: xmlFormat.↵
minify($behaviour_tree_xml_code), })); if (result.success) { validate_behaviour_tree_text = "The Behaviour Tree
is valid!"; validate_behaviour_tree_color = "#34A83B"; } else { validate_behaviour_tree_text = result.message;
validate_behaviour_tree_color = "#AA3434"; } } catch (error) { validate_behaviour_tree_text = error; validate_↵
behaviour_tree_color = "#AA3434"; } setTimeout(() => { validate_behaviour_tree_text = "Validate Behaviour Tree";
validate_behaviour_tree_color = "#4C9CFF"; validate_behaviour_tree_debounce = false; }, 1000); } </script>

<button on:mousedown={validateBehaviourTree} class="p-2 rounded-lg shadow-lg relative inset-0" style="background-
color: {validate_behaviour_tree_color}; color: white; width: 100%; border: none;">{validate_behaviour_tree_↵
text}</button
```

...

Chapter 14

WebsocketServerConfig

```
` <script> import { Label, Input, Button, Helper } from "flowbite-svelte";

import { websocket_server_connection_state, websocket_server_port, websocket_server_code, } from
"../store/websocket_store";

import { raspberry_pi_uuid_list, } from "../store/raspberry_pi_store";

/** @type {number} */ let websocketServerPort = $websocket_server_port;

/** @type {string} */ let toggleWebsocketServerMessage = "Start Websocket Server";

/** @type {string} */ let helperText = "";

/** @type {string} */ let websocketServerPortInputColor = "";

function displayWebsocketServerStatus() { if ($websocket_server_connection_state) { websocketServerPortInputColor = "green"; helperText = "Websocket Server is running"; toggleWebsocketServerMessage = "Stop Websocket Server"; } else { websocketServerPortInputColor = ""; helperText = ""; toggleWebsocketServerMessage = "Start Websocket Server"; } }

websocket_server_connection_state.subscribe(displayWebsocketServerStatus);

async function toggleWebsocketServer() { const websocketServerPortNumber = websocketServerPort * 1; if (typeof websocketServerPortNumber !== "number") { helperText = "Port must be a number"; websocketServerPortInputColor = "red"; return; } if (!$websocket_server_connection_state) { websocket_server_port.set(websocketServerPortNumber); const response = await api.startWebSocketServer({ port: $websocket_server_port, }); if (response.success) { websocket_server_connection_state.set(true); websocket_server_code.set(response.code); } else { // Error: Websocket Server is already running websocketServerPortInputColor = "red"; helperText = response.message; toggleWebsocketServerMessage = "Start Websocket Server"; } } else { await api.closeWebSocketServer(); websocket_server_connection_state.set(false); raspberry_pi_uuid_list.set([]); } } </script>

<Label for="websocket-server-port" class="block mb-2" >Input Port for Websocket Server</Label> <Input id="websocket-server-port" size="lg" placeholder="Websocket Server Port" bind:value={$websocketServerPort} disabled={$websocket_server_connection_state} color={$websocketServerPortInputColor} > <Button class="mt-4" on:click={toggleWebsocketServer} >{toggleWebsocketServerMessage}</Button> <Helper class="mt-2" color={$websocketServerPortInputColor} >{helperText}</Helper> ``
```


Chapter 15

Home

```
` <script> import BehaviourTreeHandler from "../lib/BehaviourTreeHandler.svelte"; import Stream from
"../lib/home/Stream.svelte"; import CodeBox from "../lib/home/CodeBox.svelte"; import RaspberryPiConnectBanner
from "../lib/RaspberryPiConnectBanner.svelte";

import { websocket_server_connection_state } from "../store/websocket_store";

import { main_pane_size_0_store, main_pane_size_1_store, side_pane_size_0_store, side_pane_size_1_store, }
from "../store/home_store";

import { Pane, Splitpanes } from "svelte-splitpanes"; import SaveBehaviourTreeModal from "../lib/SaveBehaviourTreeModal.svelte";

/** @type {number} */ let stream_split_height = 0;

/** @type {number} */ let stream_split_width = 0;

let main_pane_size_0 = $main_pane_size_0_store; let main_pane_size_1 = $main_pane_size_1_store; let side_pane_size_0 = $side_pane_size_0_store; let side_pane_size_1 = $side_pane_size_1_store;

function onMainResize(event) { main_pane_size_0_store.set(event.detail[0].size); main_pane_size_1_store.set(event.detail[1].size); }

function onSideResize(event) { side_pane_size_0_store.set(event.detail[0].size); side_pane_size_1_store.set(event.detail[1].size); } </script>

<main style="height: 92vh"> {#if $websocket_server_connection_state === false} <RaspberryPiConnectBanner > {/if} <SaveBehaviourTreeModal > <Splitpanes style="height:100%;padding:1em;background-color:rgb(20,20,40)" on:resize={onSideResize} > <Pane size={side_pane_size_0}>> <Splitpanes horizontal={true} on:resize={onMainResize}>> <Pane size={main_pane_size_0} minSize={5}>> <Stream > </Pane> <Pane size={main_pane_size_1} minSize={7.5}>> <CodeBox > </Pane> </Splitpanes> </Pane> <Pane size={side_pane_size_1} minSize={17} maxSize={80}>> <BehaviourTreeHandler > </Pane> </Splitpanes> </main> ``
```


Chapter 16

NotFound

`

Not Found

This route doesn't exist.

```
<style> h1 { color: #ff0040; text-transform: uppercase; font-size: 4em; font-weight: 100; } </style> ``
```


Chapter 17

Validate

```
` <script> import BehaviourTreeHandler from "../lib/BehaviourTreeHandler.svelte";

import { side_pane_size_0_store, side_pane_size_1_store, } from "../store/home_store";

import { Pane, Splitpanes } from "svelte-splitpanes"; import SaveBehaviourTreeModal from "../lib/SaveBehaviourTreeModal.svelte"; import CodeBox from "../lib/validate/CodeBox.svelte";

let side_pane_size_0 = $side_pane_size_0_store; let side_pane_size_1 = $side_pane_size_1_store;

function onSideResize(event) { side_pane_size_0_store.set(event.detail[0].size); side_pane_size_1_store.set(event.detail[1].size); }

</script>

<main style="height: 92vh"> <SaveBehaviourTreeModal > <Splitpanes style="height:100%;padding:1em;background-color:rgb(20,20,40)" on:resize={onSideResize} > <Pane size={side_pane_size_0}>> <CodeBox > </Pane> <Pane size={side_pane_size_1} minSize={17} maxSize={80}>> <BehaviourTreeHandler > </Pane> </Splitpanes> </main> ``
```


Chapter 18

WebSocket

```
` <script> import IPList from "../lib/IPList.svelte";
```

```
import WebSocketServerConfig from "../lib/WebSocketServerConfig.svelte"; import RaspberryPiSelector from  
"../lib/RaspberryPiSelector.svelte"; </script>
```

```
<main> <WebSocketServerConfig >
```

```
<RaspberryPiSelector > <IPList > </main>
```


Chapter 19

Class Index

19.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Code	41
WebSocketServer	41

Chapter 20

File Index

20.1 File List

Here is a list of all files with brief descriptions:

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src/store/home_store.js	58
src/store/raspberry_pi_store.js	58
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Chapter 21

Class Documentation

21.1 Code Class Reference

Public Member Functions

- [constructor](#) ()
- [get](#) ()
- [generate](#) ()

21.1.1 Member Function Documentation

21.1.1.1 constructor()

```
Code::constructor ( ) [inline]
```

21.1.1.2 generate()

```
Code::generate ( ) [inline]
```

21.1.1.3 get()

```
Code::get ( ) [inline]
```

The documentation for this class was generated from the following file:

- [js/websocket.js](#)

21.2 WebSocketServer Class Reference

Public Member Functions

- [constructor](#) ()
- [connect](#) (port)
- [isConnected](#) ()
- [close](#) ()
- [generateCode](#) ()
- [getCode](#) ()
- [getPort](#) ()
- [getRaspberryPiMap](#) ()
- [getSelectedRaspberryPi](#) ()
- [selectRaspberryPi](#) (uuid)

- [async startConnections](#) ()
- [sendBehaviourTree](#) (behaviour_tree)
- [startBehaviourTree](#) ()
- [stopBehaviourTree](#) ()

21.2.1 Member Function Documentation

21.2.1.1 close()

```
WebSocketServer::close ( ) [inline]
```

Call this function to close the WebSocket server.

21.2.1.2 connect()

```
WebSocketServer::connect (
    port ) [inline]
```

Call this function to start the WebSocket server.

Parameters

<code>{number}</code>	port
-----------------------	------

21.2.1.3 constructor()

```
WebSocketServer::constructor ( ) [inline]
```

```
@type {WebSocket.Server | undefined}
```

```
@type {number | undefined}
```

```
@type {Code}
```

```
@type {Map<string, WebSocket>}
```

```
@type {RaspberryPi | undefined}
```

21.2.1.4 generateCode()

```
WebSocketServer::generateCode ( ) [inline]
```

Returns

```
{number}
```

21.2.1.5 getCode()

```
WebSocketServer::getCode ( ) [inline]
```

Returns

```
{number}
```

21.2.1.6 getPort()

```
WebSocketServer::getPort ( ) [inline]
```

Returns

```
{number}
```

21.2.1.7 getRaspberryPiMap()

```
WebSocketServer::getRaspberryPiMap ( ) [inline]
```

Returns

```
{Map<string, WebSocket>}
```

21.2.1.8 getSelectedRaspberryPi()

```
WebSocketServer::getSelectedRaspberryPi ( ) [inline]
```

Returns

```
{RaspberryPi | undefined}
```

21.2.1.9 isConnected()

```
WebSocketServer::isConnected ( ) [inline]
```

21.2.1.10 selectRaspberryPi()

```
WebSocketServer::selectRaspberryPi (
    uuid ) [inline]
```

Select a Raspberry Pi to send / receive messages from.

Parameters

<i>{string}</i>	uuid
-----------------	------

Returns

21.2.1.11 sendBehaviourTree()

```
WebSocketServer::sendBehaviourTree (
    behaviour_tree ) [inline]
```

Parameters

<i>{string}</i>	behaviour_tree
-----------------	----------------

21.2.1.12 startBehaviourTree()

```
WebSocketServer::startBehaviourTree ( ) [inline]
```

21.2.1.13 startConnections()

```
async WebSocketServer::startConnections ( ) [inline]
```

21.2.1.14 stopBehaviourTree()

WebSocketServer::stopBehaviourTree () [inline]

The documentation for this class was generated from the following file:

- [js/websocket.js](#)

Chapter 22

File Documentation

22.1 js/behaviour_tree.js File Reference

Functions

- function `isDev` ()
- function `sendBehaviourTree` (_event, args)
- function `startBehaviourTree` (_event, _args)
- function `stopBehaviourTree` (_event, _args)
- function `getBehaviourTreeList` ()
- function `updateBehaviourTreeList` (behaviour_tree_list)
- function async `saveBehaviourTree` (_event, args)
- function async `removeBehaviourTree` (_event, args)
- function async `validateBehaviourTree` (_event, args)
- ipcMain `handle` ('sendBehaviourTree', sendBehaviourTree)

Variables

- `const` { `app`, `ipcMain` } = require('electron')
- `const` `exec` = util.promisify(require('child_process').exec)
- `const` `Os` = require('os')
- `const` `path` = require("path")
- `const` `fs` = require("fs")
- `const` `base_path` = app.getAppPath()
- `const` `resources_dir` = `isDev`() ? path.join(`base_path`, 'resources') : path.join(`base_path`, '..', '..', 'resources')

22.1.1 Function Documentation

22.1.1.1 getBehaviourTreeList()

```
function getBehaviourTreeList ( )
```

22.1.1.2 handle()

```
ipcMain handle (
    'sendBehaviourTree' ,
    sendBehaviourTree )
```

22.1.1.3 isDev()

```
function isDev ( )
```

22.1.1.4 removeBehaviourTree()

```
function async removeBehaviourTree (
    _event,
    args )
```

22.1.1.5 saveBehaviourTree()

```
function async saveBehaviourTree (
    _event,
    args )
```

22.1.1.6 sendBehaviourTree()

```
function sendBehaviourTree (
    _event,
    args )
```

22.1.1.7 startBehaviourTree()

```
function startBehaviourTree (
    _event,
    _args )
```

22.1.1.8 stopBehaviourTree()

```
function stopBehaviourTree (
    _event,
    _args )
```

22.1.1.9 updateBehaviourTreeList()

```
function updateBehaviourTreeList (
    behaviour_tree_list )
```

Parameters

<code>{any[]}</code>	<code>behaviour_tree_list</code>
----------------------	----------------------------------

22.1.1.10 validateBehaviourTree()

```
function async validateBehaviourTree (
    _event,
    args )
```

@type {string}

22.1.2 Variable Documentation

22.1.2.1 base_path

```
const base_path = app.getAppPath()
```

22.1.2.2 const

```
const { app, ipcMain } = require('electron')
```

22.1.2.3 exec

```
const exec = util.promisify(require('child_process').exec)
```

22.1.2.4 fs

```
const fs = require("fs")
```

22.1.2.5 Os

```
const Os = require('os')
```

22.1.2.6 path

```
const path = require("path")
```

22.1.2.7 resources_dir

```
const resources_dir = isDev() ? path.join(base_path, 'resources') : path.join(base_path, '..', '..', 'resources')
```

22.2 js/device.js File Reference

Functions

- function [getLocalIPList](#) (_event, _args)
- ipcMain [handle](#) ('getLocalIPList', [getLocalIPList](#))

Variables

- [const](#) [os](#)
- module [exports](#)

22.2.1 Function Documentation

22.2.1.1 getLocalIPList()

```
function getLocalIPList (
    _event,
    _args )
```

22.2.1.2 handle()

```
ipcMain handle (
    'getLocalIPList' ,
    getLocalIPList )
```

22.2.2 Variable Documentation

22.2.2.1 exports

```
module exports
Initial value:
= {
    getLocalIPList: getLocalIPList
}
```

22.2.2.2 os

```
const os
Initial value:
= require('os')
const { ipcMain } = require('electron')
```

22.3 js/main.js File Reference

Functions

- function `isDev` ()
- function `createWindow` ()
- `app` on ('ready', `createWindow`)
- function `onClose` ()

Variables

- `const` { `app`, `BrowserWindow` } = `require`('electron')
- `const` `path` = `require`('path')
- `const` `serve` = `require`('electron-serve')
- `const` `loadURL` = `serve`({ `directory`: 'public' })

22.3.1 Function Documentation

22.3.1.1 createWindow()

```
function createWindow ( )
```


22.3.1.2 isDev()

```
function isDev ( )
```

22.3.1.3 on()

```
app on (
    'ready' ,
    createWindow )
```

22.3.1.4 onClose()

```
function onClose ( )
```

22.3.2 Variable Documentation

22.3.2.1 const

```
const { app, BrowserWindow } = require('electron')
```

22.3.2.2 loadURL

```
const loadURL = serve({ directory: 'public' })
```

22.3.2.3 path

```
const path = require('path')
```

22.3.2.4 serve

```
const serve = require('electron-serve')
```

22.4 src/main.js File Reference

Variables

- `import app` `pcss`
- `import App` from `App` `svelte`
- `const app`

22.4.1 Variable Documentation

22.4.1.1 app

```
export default app
```

Initial value:

```
= new App({
  target: document.body,
  props: {
    name: "world",
  },
})
```

22.4.1.2 pcss

```
import app pcss
```

22.4.1.3 svelte

```
import App from App svelte
```

22.5 js/preload.js File Reference

22.6 js/raspberry_pi.js File Reference

Functions

- function [unselectRaspberryPi](#) (_event, _args)
- function [selectRaspberryPi](#) (_event, args)
- function [getRaspberryPiList](#) (_event, _args)
- function [getSelectedRaspberryPi](#) (_event, _args)
- ipcMain [handle](#) ('selectRaspberryPi', [selectRaspberryPi](#))

Variables

- [const](#) { ipcMain } = require('electron')

22.6.1 Function Documentation

22.6.1.1 getRaspberryPiList()

```
function getRaspberryPiList (
    _event,
    _args )
```

22.6.1.2 getSelectedRaspberryPi()

```
function getSelectedRaspberryPi (
    _event,
    _args )
```

22.6.1.3 handle()

```
ipcMain handle (
    'selectRaspberryPi' ,
    selectRaspberryPi )
```

22.6.1.4 selectRaspberryPi()

```
function selectRaspberryPi (
    _event,
    args )
```

22.6.1.5 unselectRaspberryPi()

```
function unselectRaspberryPi (
    _event,
    _args )
```

22.6.2 Variable Documentation

22.6.2.1 const

```
const { ipcMain } = require('electron')
```

22.7 js/store.js File Reference

22.8 js/websocket.js File Reference

Classes

- class [Code](#)
- class [WebSocketServer](#)

Functions

- function [getRandomInt](#) (min, max)

Variables

- [const WebSocket](#) = require('ws')
- module [exports](#) = { websocket_server: new [WebSocketServer](#)() }

22.8.1 Function Documentation

22.8.1.1 getRandomInt()

```
function getRandomInt (
    min,
    max )
```

Parameters

<i>{number}</i>	min
<i>{number}</i>	max

Returns

{number}

22.8.2 Variable Documentation

22.8.2.1 exports

```
module exports = { websocket_server: new WebSocketServer() }
```

22.8.2.2 WebSocket

```
const WebSocket = require('ws')
```

22.9 js/websocket_events.js File Reference

Functions

- function async [startWebSocketServer](#) ([_event](#), [args](#))
- function [closeWebSocketServer](#) ([_event](#), [_args](#))
- function [getWebSocketServer](#) ([_event](#), [_args](#))
- ipcMain [handle](#) ('[startWebSocketServer](#)', [startWebSocketServer](#))

Variables

- [const](#) { ipcMain } = require('electron')
- [const](#) [tcpPortUsed](#) = require('tcp-port-used')

22.9.1 Function Documentation

22.9.1.1 closeWebSocketServer()

```
function closeWebSocketServer (  
    _event,  
    _args )
```

22.9.1.2 getWebSocketServer()

```
function getWebSocketServer (  
    _event,  
    _args )
```

22.9.1.3 handle()

```
ipcMain handle (  
    'startWebSocketServer' ,  
    startWebSocketServer )
```

22.9.1.4 startWebSocketServer()

```
function async startWebSocketServer (  
    _event,  
    args )
```

22.9.2 Variable Documentation

22.9.2.1 const

```
const { ipcMain } = require('electron')
```

22.9.2.2 tcpPortUsed

```
const tcpPortUsed = require('tcp-port-used')
```

22.10 README.md File Reference

22.11 rollup.config.js File Reference

Functions

- function `serve` ()

Variables

- `import` `svelte` from rollup plugin `svelte`
- `import` `commonjs` from rollup plugin `commonjs`
- `import` `resolve` from rollup plugin node `resolve`
- `import` `livereload` from rollup plugin `livereload`
- `import` { `terser` } from 'rollup-plugin-terser'
- `import` `css` from rollup plugin `css` `only`
- `import` `postcss` from rollup plugin `postcss` `import` `tailwindcss` from `tailwindcss`
- `import` `nodePolyfills` from rollup plugin node `polyfills`
- `const` `tailwindConfig` = `require`('./tailwind.config.cjs')
- `const` `production` = `!process.env.ROLLUP_WATCH`
- `export` `default`

22.11.1 Function Documentation

22.11.1.1 `serve()`

```
function serve ( )
```

22.11.2 Variable Documentation

22.11.2.1 `commonjs`

```
import commonjs from rollup plugin commonjs
```

22.11.2.2 `default`

```
export default
```

22.11.2.3 `import`

```
import { terser } from 'rollup-plugin-terser'
```

22.11.2.4 `livereload`

```
import livereload from rollup plugin livereload
```

22.11.2.5 only

```
import css from rollup plugin css only
```

22.11.2.6 polyfills

```
import nodePolyfills from rollup plugin node polyfills
```

22.11.2.7 production

```
const production = !process.env.ROLLUP_WATCH
```

22.11.2.8 resolve

```
import resolve from rollup plugin node resolve
```

22.11.2.9 svelte

```
import NotFound from routes NotFound svelte
```

22.11.2.10 tailwindConfig

```
const tailwindConfig = require('./tailwind.config.cjs')
```

22.11.2.11 tailwindcss

```
import postcss from rollup plugin postcss import tailwindcss from tailwindcss
```

22.12 src/App.svelte File Reference

22.13 src/lib/BehaviourTreeHandler.svelte File Reference

22.14 src/lib/CodeBox_Constants.js File Reference

Variables

- `import { hoverTooltip } from "@codemirror/view"`
- `export const range_0_180`
- `export const range_0_360`
- `export const range_0_100`
- `export const condition_operator_types`
- `const node_information_list`
- `export const node_hover`

22.14.1 Variable Documentation

22.14.1.1 condition_operator_types

```
export const condition_operator_types
```

22.14.1.2 import

```
import { hoverTooltip } from "@codemirror/view"
```

22.14.1.3 node_hover

```
export const node_hover
```

Initial value:

```
= hoverTooltip((view, pos, side) => {
  const { from, to, text } = view.state.doc.lineAt(pos);
  let start = pos,
      end = pos;
  while (start > from && /\w:/ .test(text[start - from - 1])) start--;
  while (end < to && /\w:/ .test(text[end - from])) end++;
  if ((start == pos && side < 0) || (end == pos && side > 0)) return null;
  const highlighted_node = text.slice(start - from, end - from);
  const node_information = node_information_list.get(highlighted_node);
  if (!node_information) return null;
  return {
    pos: start,
    end,
    above: true,
    create(_) {
      const dom = document.createElement("div");
      dom.textContent = node_information;
      return { dom };
    },
  };
});
```

22.14.1.4 node_information_list

```
const node_information_list
```

Initial value:

```
= new Map([
  ["Root", "Start of every node tree"],
  ["Selector", "Runs children until one succeeds"],
  ["Sequence", "Runs children until one fails"],
  ["Random", "Runs a random child"],
  ["UseRoot", "Goes to the given root node id"],
  ["Invert", "Inverts the result of the child"],
  ["Repeat", "Repeats the child given the amount of times"],
  ["Fail", "Always fails"],
  ["Succeed", "Always succeeds"],
  ["Blackboard:ChangeInteger", "Changes the integer value of the blackboard"],
  ["Blackboard:IntegerCondition", "Checks the integer value of the blackboard"],
  ["Action:PauseExecution", "Pauses the execution for the given amount of time"],
  ["Action:Print", "Prints the given message"],
  ["Action:Drive", "Set the speed and direction of the car"],
  ["Action:Turn", "Turns the car by the given angle"],
  ["Action:SetAngle", "Turns the car by the given angle"],
  ["Action:SetSpeed", "Moves the car by the given speed"],
  ["Action:SetWheelDirection", "Sets the direction of the car"],
  ["Condition:SucceedOnAverageNearbyScan", "Checks the average distance between two angles and succeeds if the average is below the specified cm"],
  ["Condition:SucceedOnAnyNearbyScan", "Checks the distance of all nearby points and succeeds if any is below the specified cm"],
  ["Condition:SucceedOnAverageColour", "Checks the average colour of the camera and succeeds if the colour is within the tolerance"],
]);
@type {Map<string, string>}
```

22.14.1.5 range_0_100

```
export const range_0_100
```

22.14.1.6 range_0_180

```
export const range_0_180
```

22.14.1.7 range_0_360

```
export const range_0_360
```

22.15 src/lib/home/CodeBox.svelte File Reference

22.16 src/lib/validate/CodeBox.svelte File Reference

22.17 src/lib/home/CodeMessagingBar.svelte File Reference

22.18 src/lib/home/Stream.svelte File Reference

22.19 src/lib/IPList.svelte File Reference

22.20 src/lib/NavigationBar.svelte File Reference

22.21 src/lib/RaspberryPiConnectBanner.svelte File Reference

22.22 src/lib/RaspberryPiSelector.svelte File Reference

22.23 src/lib/SaveBehaviourTreeModal.svelte File Reference

22.24 src/lib/validate/CodeButton.svelte File Reference

22.25 src/lib/WebsocketServerConfig.svelte File Reference

22.26 src/routes.js File Reference

Variables

- `import` Home from routes Home `svelte`
- `export default`

22.26.1 Variable Documentation

22.26.1.1 default

```
export default
```

Initial value:

```
{  
  '': Home,  
  '/websocket': Websocket,  
  '/validate': Validate,  
  '*': NotFound  
}
```

22.26.1.2 svelte

```
import NotFound from routes NotFound svelte
```


22.27 src/routes/Home.svelte File Reference

22.28 src/routes/NotFound.svelte File Reference

22.29 src/routes/Validate.svelte File Reference

22.30 src/routes/Websocket.svelte File Reference

22.31 src/store/behaviour_tree_store.js File Reference

Functions

- function async [main](#) ()

Variables

- [import](#) { writable } from 'svelte/store'
- export [const](#) [behaviour_tree_xml_code](#) = writable("")
- export [const](#) [show_behaviour_tree_save_modal](#) = writable(false)
- export [const](#) [behaviour_tree_save_modal_code](#) = writable("")
- export let [behaviour_tree_list](#) = writable([])

22.31.1 Function Documentation

22.31.1.1 main()

```
main ( )
```

22.31.2 Variable Documentation

22.31.2.1 behaviour_tree_list

```
export let behaviour_tree_list = writable([])
```

22.31.2.2 behaviour_tree_save_modal_code

```
export const behaviour_tree_save_modal_code = writable("")
```

22.31.2.3 behaviour_tree_xml_code

```
export const behaviour_tree_xml_code = writable("")
```

22.31.2.4 import

```
import { writable } from 'svelte/store'
```

22.31.2.5 show_behaviour_tree_save_modal

```
export const show_behaviour_tree_save_modal = writable(false)
```

22.32 src/store/home_store.js File Reference

Variables

- `import { writable } from 'svelte/store'`
- `export const main_pane_size_0_store = writable(80)`
- `export const main_pane_size_1_store = writable(20)`
- `export const side_pane_size_0_store = writable(83)`
- `export const side_pane_size_1_store = writable(17)`
- `export const lidar_toggle = writable(true)`

22.32.1 Variable Documentation

22.32.1.1 import

```
import { writable } from 'svelte/store'
```

22.32.1.2 lidar_toggle

```
export const lidar_toggle = writable(true)
```

22.32.1.3 main_pane_size_0_store

```
export const main_pane_size_0_store = writable(80)
```

22.32.1.4 main_pane_size_1_store

```
export const main_pane_size_1_store = writable(20)
```

22.32.1.5 side_pane_size_0_store

```
export const side_pane_size_0_store = writable(83)
```

22.32.1.6 side_pane_size_1_store

```
export const side_pane_size_1_store = writable(17)
```

22.33 src/store/raspberry_pi_store.js File Reference

Functions

- `function async main ()`
- `window api onConnection ((value)=> { value=JSON.parse(value);console.log(value);raspberrypi_uuid_↵list.update((list)=> { list.push(value.uuid);return list;});})`
- `window api onDisconnection ((value)=> { value=JSON.parse(value);console.log(value);raspberrypi_uuid_↵_list.update((list)=> { list=list.filter((uuid)=> uuid !==value.uuid);return list;});})`

Variables

- `import { writable } from 'svelte/store'`
- `export const raspberrypi_uuid_list = writable([])`
- `export const selected_raspberrypi_uuid = writable("")`

22.33.1 Function Documentation

22.33.1.1 main()

```
function async main ( )
```

22.33.1.2 onConnection()

```
window api onConnection (
    (value) ,
    { value=JSON.parse(value);console.log(value);raspberry_pi_uuid_list.update((list)=>
{ list.push(value.uuid);return list;});} )
```

22.33.1.3 onDisconnection()

```
window api onDisconnection (
    (value) ,
    { value=JSON.parse(value);console.log(value);raspberry_pi_uuid_list.update((list)=>
{ list=list.filter((uuid)=> uuid !==value.uuid);return list;});} )
```

22.33.2 Variable Documentation

22.33.2.1 import

```
import { writable } from 'svelte/store'
```

22.33.2.2 raspberry_pi_uuid_list

```
export const raspberry_pi_uuid_list = writable([])
```

22.33.2.3 selected_raspberry_pi_uuid

```
export const selected_raspberry_pi_uuid = writable("")
```

22.34 src/store/websocket_store.js File Reference

Functions

- function async [main](#) ()
- window api [onMessage](#) ((value)=> { value=JSON.parse(value);lidar_stream.set(value.lidar);camera_↔stream.set(value.frame_buffer);})

Variables

- [import](#) { writable } from 'svelte/store'
- export [const websocket_server_connection_state](#) = writable(false)
- export [const websocket_server_port](#) = writable(3000)
- export [const websocket_server_code](#) = writable(-1)
- export [const lidar_stream](#) = writable([])
- export [const camera_stream](#) = writable("")

22.34.1 Function Documentation

22.34.1.1 main()

```
function async main ( )
```

22.34.1.2 onMessage()

```
window api onMessage (
    (value) ,
    { value=JSON.parse(value);lidar_stream.set(value.lidar);camera_stream.set(value.↵
frame_buffer);} )
```

22.34.2 Variable Documentation

22.34.2.1 camera_stream

```
export const camera_stream = writable("")
```

22.34.2.2 import

```
import { writable } from 'svelte/store'
```

22.34.2.3 lidar_stream

```
export const lidar_stream = writable([])
```

22.34.2.4 websocket_server_code

```
export const websocket_server_code = writable(-1)
```

22.34.2.5 websocket_server_connection_state

```
export const websocket_server_connection_state = writable(false)
```

22.34.2.6 websocket_server_port

```
export const websocket_server_port = writable(3000)
```

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