L0Cost Robot Controller SDcard files

There are three file types expected on the SDcard, configuration files, read once when the L0cost controller boots, html files and script files, read either when the controller boots, in the case of the startup script, immediately when the controller initialisation is complete, in the case of the main script, or when requested in a command input.

Read this in conjunction with the example SDcard contents to understand what is being done.

The configuration files are config.txt (the name is fixed), the wifi configuration file, which is listed in the config file and the PS3 configuration file, also listed in the config file. Because the L0cost controller can only run either Bluetooth or wifi separately and not concurrently, only one for these two file can be in the config file.

Configuration file.

The config file has a fixed format and the lines must be in the order listed, though lines at the end will use default values if not included.

Line	Parameter	Explanation
1	Mode	Sets the mode of operation. This value is interpreted and sets the execution flags in the controller to cause the controller to behave in the desired manner.
2	Hostname	This is the name the robot will be known by when requested, typically in response to a command or for wireless network identification. It should be a valid network name of not more than 20 characters or it will be truncated.
		Wifi config and PS3 configs are mutually exclusive
3	Wifi config	This is the name of the file on the SDcard containing the wifi configuration information. Example: wifi.txt would expect the wifi configuration details to be contained in the file called wifi.txt on the SDcard. This name is actually the default.
	PS3 config	This is the name of the file on the SDcard containing the PS3 configuration information. Example: PS3.txt would expect the PS3 configuration details to be contained in the file called PS3.txt on the SDcard. This name is actually the default.
4	Startup script	This is the name of the file containing the startup script. This script will accept changes to the controller configuration to customise the usage, such as setup camera framesize or servo defaults. This entry must be here, even if pointing to an empty file, if a main script is required.
5	Main script	This is the name of the file containing the Main script which will be executed as soon as the setup for the controller is complete.

Table of Modes of Operation

Config Mode Entry	
	In all BASIC modes, pins 12 and 13 are used to provide drive signals to transistors switching current to motors. Remote commands are passed to the serial port without handshaking
BASICSTA	Runs as a wifi client with a web page and negative drive pin control
BASICAP	Runs as a wifi access point with a web page and negative drive pin control
BASICPS3	Runs with PS3 controller input and negative drive pin control

BASICSTA+	Runs as a wifi client with a web page and positive drive pin control
BASICAP+	Runs as a wifi access point with a web page and positive drive pin control
BASICPS3+	Runs with PS3 controller input and positive drive pin control
	REMOTE modes use pins 12 and 13 for handshaking on the serial communications
REMOTESTA	Runs as wifi client with a web page
REMOTEAP	Runs as wifi access point with a web page
REMOTEPS3	Runs with PS3 controller input
	SERVO modes assign pins 12 and 13 to be used for controlling servos. Remote commands are passed to the serial port without handshaking
SERVOSTA	Runs as a wifi client with a webpage
SERVOAP	Runs as a wifi access point with a webpage
SERVOPS3	Runs with PS3 controller input
	SOKOBAN modes assign motor control to pins 3, 12 and 13 to drive logic gates and a motor controller to provide forward/reverse/turn control from 3 pins. Remote commands are passed to the serial port without handshaking, serial command input is disabled.
SOKOBANSTA	Run as a wifi client with a web page.
SOKOBANAP	Run as a wifi access point with a web page
SOKOBANPS3	Run with PS3 controller input

Wifi configuration

The wifi file has a fixed format and the lines must be in the order listed, though lines at the end will use default values if not included.

Line	Parameter	Explanation
1	SSID	This is the SSID that as a client the controller will attempt to connect to, or as an access point, will broadcast.
2	password	This is the password associated with the SSID
3	Html file	This is the name of the html file on the SDcard which will be used as the home web page for the controller. The default page serves the video stream from the camera.
4	Webserver port	This is the port on the controller webserver used to serve the default home web page. Defaults to 80
5	Streaming port	This is the port on the controller webserver used to serve the video stream. Defaults to 81.

PS3 Configuration

The PS3 file has a fixed format and the lines must be in the order listed, though lines at the end will use default values if not included. The purpose of the file is to firstly connect the PS3 controller over Bluetooth to the L0cost controller. The rest of the file maps the input from the PS3 controller to commands that can either be executed by the L0cost controller or routed to the remote controller. There are many entries and each can either be active or not. Entries not included at the end of the list are deemed to be not active, but all entries beforehand must be in the fixed sequence listed in the table below. On startup, this file is read and each entry loaded into a translation table, which when a PS3 control is activated, is converted into a command prefix followed by any values received

from the controller. Lines beginning with a 0 are ignored and the maximum command prefix length is 19 characters

Line	Example Prefix	Explanation
1	A0:5A:5A:A0:09:84	MAC address of the PS3 controller to be paired
2	LMTR	left and right joystick values are appended Example: LMTR0000025500000255
3	XMTR	left and right joystick values are appended Example: XMTR0000025500000255
4	XLJP	left joystick pressed, the command has no values
5	XLJR	left joystick released, the command has no values
6	XRJP	right joystick pressed, the command has no values
7	XRJR	right joystick released, the command has no values
8	XUPV	up button values, the button pressure value is appended Example: XUPV0255
9	XUBP	up button pressed, the command has no values
10	XUBR	up button released, the command has no values
11	XRBV	right button values, the button pressure value is appended Example: XRBV0255
12	XRBP	right button pressed, the command has no values
13	XRBR	right button released, the command has no values
14	XDBV	down button values, the button pressure value is appended Example: XDBV0255
15	XDBP	down button pressed, the command has no values
16	XDBR	down button released, the command has no values
17	XLBV	left button values, the button pressure value is appended Example: XLBV0255
18	XLBP	left button pressed, the command has no values
19	XLBR	left button released, the command has no values
20	XXBV	cross button values, the button pressure value is appended Example: XXBV0255
21	XXBP	cross button pressed, the command has no values
22	XXBR	cross button released, the command has no values
23	XSBV	square button values, the button pressure value is appended Example: XSBV0255
24	SBP	square button pressed, the command has no values
25	XSBR	square button released, the command has no values
26	XTBV	triangle button values, the button pressure value is appended Example: XTBV0255
27	XTBP	triangle button pressed, the command has no values
28	XTBR	triangle button released, the command has no values
29	XCBV	circle button values, the button pressure value is appended Example: XCBV0255
30	XCBP	circle button pressed, the command has no values
31	XCBR	circle button released, the command has no values
32	XLSV	left shoulder values, the button pressure value is appended Example: XLSV0255
33	XLSP	left shoulder pressed, the command has no values
34	XLSR	left shoulder released, the command has no values
35	XRSV	right shoulder values, the button pressure value is appended

		Example: XRSV0255
36	XRSP	right shoulder pressed, the command has no values
37	XRSR	right shoulder released, the command has no values
38	XLTV	left trigger values, the button pressure value is appended Example: XLTV0255
39	XLTP	left trigger pressed, the command has no values
40	XLTR	left trigger released, the command has no values
41	XRTV	right trigger values, the button pressure value is appended Example: XRTV0255
42	XRTP	right trigger pressed, the command has no values
43	XRTR	right trigger released, the command has no values
44	XSLP	select button pressed, the command has no values
45	XSLR	select button released, the command has no values
46	XSTP	start button pressed, the command has no values
47	XSTR	start button released, the command has no values
48	XPSP	PS3 button pressed, the command has no values
49	XPSR	PS3 button released, the command has no values

HTML file

The wifi config may contain a web page file name to be used to load into the webserver as the default home page. If the load of this file fails then a default page is loaded which displays the video stream from the server. The webserver only serves this page and any other items that are required on the page must be obtained from another server.

The option to dynamically update this page may be added at a later date.

Startup script file

This file is read as part of the setup phase of the L0cost robot controller software and is intended to initialise various parameters for the camera or attached servos and motors. Remote commands encountered are executed but file commands are not. Local commands may not be executed.

Main script file

This file is read at the start of normal processing and may contain any valid script commands. This script may be the only thing the robot does, excluding all other command input.