Camera Algorithm System

* Installed on Raspberry Pi
* User Interface is via Rapberry Pi Display peripheral.
* Image capture is via IR Camera peripheral.
* Communicates with Electrical Circuit System vi RF Trigger Peripheral

Github

<https://github.com/bradbn/pelms-2023-s2/>

Code Assistance

12-bit images

<https://forums.raspberrypi.com/viewtopic.php?t=351330>

<https://forums.raspberrypi.com/viewtopic.php?t=351330>

Pylint errors in GPIO

<https://forums.raspberrypi.com/viewtopic.php?t=366346>

GPIO source

<https://raspi.tv/2013/rpi-gpio-basics-4-setting-up-rpi-gpio-numbering-systems-and-inputs>

PiCamer manual

<https://datasheets.raspberrypi.com/camera/picamera2-manual.pdf>

<https://pypi.org/project/picamera2/0.2.2/>

<https://hackerwarehouse.com/product/75-1000-mhz-antenna/>

<https://www.raspberrypi.com/documentation/computers/camera_software.html#libcamera-and-rpicam-apps>

<https://core-electronics.com.au/raspberry-pi-camera-hdmi-cable-extension.html>

Raspi-config

/\* Command strings \*/

#define GET\_CAN\_EXPAND "sudo raspi-config nonint get\_can\_expand"

#define EXPAND\_FS "sudo raspi-config nonint do\_expand\_rootfs"

#define GET\_HOSTNAME "sudo raspi-config nonint get\_hostname"

#define SET\_HOSTNAME "sudo raspi-config nonint do\_hostname %s"

#define GET\_BOOT\_CLI "sudo raspi-config nonint get\_boot\_cli"

#define GET\_AUTOLOGIN "sudo raspi-config nonint get\_autologin"

#define SET\_BOOT\_CLI "sudo raspi-config nonint do\_boot\_behaviour B1"

#define SET\_BOOT\_CLIA "sudo raspi-config nonint do\_boot\_behaviour B2"

#define SET\_BOOT\_GUI "sudo raspi-config nonint do\_boot\_behaviour B3"

#define SET\_BOOT\_GUIA "sudo raspi-config nonint do\_boot\_behaviour B4"

#define GET\_BOOT\_WAIT "sudo raspi-config nonint get\_boot\_wait"

#define SET\_BOOT\_WAIT "sudo raspi-config nonint do\_boot\_wait %d"

#define GET\_SPLASH "sudo raspi-config nonint get\_boot\_splash"

#define SET\_SPLASH "sudo raspi-config nonint do\_boot\_splash %d"

#define GET\_OVERSCAN "sudo raspi-config nonint get\_overscan"

#define SET\_OVERSCAN "sudo raspi-config nonint do\_overscan %d"

#define GET\_CAMERA "sudo raspi-config nonint get\_camera"

#define SET\_CAMERA "sudo raspi-config nonint do\_camera %d"

#define GET\_SSH "sudo raspi-config nonint get\_ssh"

#define SET\_SSH "sudo raspi-config nonint do\_ssh %d"

#define GET\_VNC "sudo raspi-config nonint get\_vnc"

#define SET\_VNC "sudo raspi-config nonint do\_vnc %d"

#define GET\_SPI "sudo raspi-config nonint get\_spi"

#define SET\_SPI "sudo raspi-config nonint do\_spi %d"

#define GET\_I2C "sudo raspi-config nonint get\_i2c"

#define SET\_I2C "sudo raspi-config nonint do\_i2c %d"

#define GET\_SERIAL "sudo raspi-config nonint get\_serial"

#define GET\_SERIALHW "sudo raspi-config nonint get\_serial\_hw"

#define SET\_SERIAL "sudo raspi-config nonint do\_serial %d"

#define GET\_1WIRE "sudo raspi-config nonint get\_onewire"

#define SET\_1WIRE "sudo raspi-config nonint do\_onewire %d"

#define GET\_RGPIO "sudo raspi-config nonint get\_rgpio"

#define SET\_RGPIO "sudo raspi-config nonint do\_rgpio %d"

#define GET\_PI\_TYPE "sudo raspi-config nonint get\_pi\_type"

#define GET\_OVERCLOCK "sudo raspi-config nonint get\_config\_var arm\_freq /boot/config.txt"

#define SET\_OVERCLOCK "sudo raspi-config nonint do\_overclock %s"

#define GET\_GPU\_MEM "sudo raspi-config nonint get\_config\_var gpu\_mem /boot/config.txt"

#define GET\_GPU\_MEM\_256 "sudo raspi-config nonint get\_config\_var gpu\_mem\_256 /boot/config.txt"

#define GET\_GPU\_MEM\_512 "sudo raspi-config nonint get\_config\_var gpu\_mem\_512 /boot/config.txt"

#define GET\_GPU\_MEM\_1K "sudo raspi-config nonint get\_config\_var gpu\_mem\_1024 /boot/config.txt"

#define SET\_GPU\_MEM "sudo raspi-config nonint do\_memory\_split %d"

#define GET\_HDMI\_GROUP "sudo raspi-config nonint get\_config\_var hdmi\_group /boot/config.txt"

#define GET\_HDMI\_MODE "sudo raspi-config nonint get\_config\_var hdmi\_mode /boot/config.txt"

#define SET\_HDMI\_GP\_MOD "sudo raspi-config nonint do\_resolution %d %d"

#define GET\_WIFI\_CTRY "sudo raspi-config nonint get\_wifi\_country"

#define SET\_WIFI\_CTRY "sudo raspi-config nonint do\_wifi\_country %s"

#define CHANGE\_PASSWD "(echo \"%s\" ; echo \"%s\" ; echo \"%s\") | passwd"