Wyze Camera Experiments

Experiments with Wyze Cameras.

2023-12-05

Notes

Testing on a Wyze Cam v2, model numner WYZEC2.

Preparing the SD Card

Downloaded openmiko_firmware.bin, renamed it to `boot.bin`, and copied it to the root of a freshly VFAT formatted SD card.

Also on the card, created the following file:

`/config/overlay/etc/hostname`

```
puck
```

Used the scripts included in the `utilities/` directory to create `wpa_supplicant.conf` and `openmiko.conf` files, which were also copied to the `/config/overlay/etc/` directory on the SD card.

`/config/overlay/etc/wpa_supplicant.conf`

```
ctrl_interface=/var/run/wpa_supplicant
ctrl_interface_group=0
ap_scan=1
bgscan="simple:30:-45:300"

network={
        ssid="K"
        scan_ssid=0
        key_mgmt=WPA-PSK
        pairwise=CCMP TKIP
        group=CCMP TKIP WEP104 WEP40
        psk="[REDACTED]"
        priority=2
}
```

`/config/overlay/etc/openmiko.conf`

```
ENABLE_DEBUG=0
# Starts ffmpeg on startup recording from the v4l2rtspserver
ENABLE_RECORDING=0
# Start the micropython based api
ENABLE_API=1
# Use a swapfile on the sdcard
ENABLE_SWAP=1
```

```
# Use this setting if swapfile is a dedicated partition
SWAPFILE=/dev/mmcblk0p1
# Set partition to use for mounting at /sdcard
SD_PARTITION=/dev/mmcblk0p2
SD_FILESYSTEM=vfat
# Enable MJPEG over HTTP
ENABLE_MJPEG_OVER_HTTP=0
MJPEG_FPS=15
# Script that detects nighttime/daytime and turns on IR LEDs
ENABLE_AUTONIGHT=1
AUTONIGHT_PARAMS="-j 3 -w 3 -1 1200000 -2 930000,14,10 -3 3000,17,8"
# Set alternate videocapture settings file
# VIDEO_CAPTURE_SETTINGS=/etc/videocapture_settings_1_encoder.json
# Set enable audio (is currently buggy, use at your own risk!)
ENABLE_AUDIO=0
# Make sure these settings match the /etc/videocapture_settings.json file
VIDEO_DEV_1=/dev/video3
VIDEO_DEV_2=/dev/video4
VIDEO_DEV_3=/dev/video5
# Use 8189fs for WyzeCam V2. For the WyzeCam Pan and Dafang use 8189es
WIFI_MODULE=8189fs
# Disables LEDs on the camera
DISABLE_LEDS=0
# Enable Logging
ENABLE_LOGGING=0
```

Flashing Wyze Cam

- Insert the SD card into the Wyze Cam.
- Hold down the button, plug in the power, wait about 3 seconds for the blue and white LEDs to light (and stay lit), and let go of the button.
- The camera should be ready to SSH in to when the amber LED blinks at a rate of about half a second.

Playback

VLC `rtsp://10.0.0.122:8554/video3_unicast`

SSH

You can SSH in to a camera with `ssh root@10.0.0.122`. The default password is `root`.

Misc.

```
# dmesg
[    0.000000] Initializing cgroup subsys cpu
[    0.000000] Initializing cgroup subsys cpuacct
[    0.000000] Linux version 3.10.14 (root@a79fc9893cc9) (gcc version 4.7.4 (Buildroot 2016.02) ) #1 
[    0.000000] bootconsole [early0] enabled
[    0.000000] CPU0 RESET ERROR PC:80207FE0
[    0.000000] [<80207fe0>] __delay+0x0/0x10
[    0.000000] CPU0 revision is: 00d00101 (Ingenic Xburst)
[    0.000000] FPU revision is: 00b70000
[    0.000000] cgu_get_rate, parent = 860160000, rate = 0, m = 0, n = 0, reg val = 0x000020ff
[    0.000000] CCLK:860MHz L2CLK:430Mhz H0CLK:200MHz H2CLK:200Mhz PCLK:100Mhz
[    0.000000] Determined physical RAM map:
[    0.000000]  memory: 004f7000 @ 00010000 (usable)
[    0.000000]  memory: 00079000 @ 00507000 (usable after init)
[    0.000000] User-defined physical RAM map:
[    0.000000]  memory: 06000000 @ 00000000 (usable)
[    0.000000] Initrd not found or empty - disabling initrd
[    0.000000] Zone ranges:
[    0.000000]   Normal   [mem 0x00000000-0x05ffffff]
[    0.000000] Movable zone start for each node
[    0.000000] Early memory node ranges
[    0.000000]   node   0: [mem 0x00000000-0x05ffffff]
[    0.000000] On node 0 totalpages: 24576
[    0.000000] free_area_init_node: node 0, pgdat 80503cf0, node_mem_map 81000000
[    0.000000]   Normal zone: 192 pages used for memmap
[    0.000000]   Normal zone: 0 pages reserved
[    0.000000]   Normal zone: 24576 pages, LIFO batch:3
[    0.000000] Primary instruction cache 32kB, 8-way, VIPT, linesize 32 bytes.
[    0.000000] Primary data cache 32kB, 8-way, VIPT, no aliases, linesize 32 bytes
[    0.000000] pls check processor_id[0x00d00101],sc_jz not support!
[    0.000000] MIPS secondary cache 128kB, 8-way, linesize 32 bytes.
[    0.000000] pcpu-alloc: s0 r0 d32768 u32768 alloc=1*32768
[    0.000000] pcpu-alloc: [0] 0
[    0.000000] Built 1 zonelists in Zone order, mobility grouping off.  Total pages: 24384
[    0.000000] Kernel command line: console=tty0 console=ttyS1,115200n8 mem=96M@0x0 ispmem=8M@0x60000
[    0.000000] PID hash table entries: 512 (order: -1, 2048 bytes)
[    0.000000] Dentry cache hash table entries: 16384 (order: 4, 65536 bytes)
[    0.000000] Inode-cache hash table entries: 8192 (order: 3, 32768 bytes)
[    0.000000] Memory: 91360k/98304k available (3877k kernel code, 6944k reserved, 1205k data, 484k i
[    0.000000] SLUB: HWalign=32, Order=0-3, MinObjects=0, CPUs=1, Nodes=1
[    0.000000] Preemptible hierarchical RCU implementation.
[    0.000000] NR_IRQS:418
[    0.000000] clockevents_config_and_register success.
[    0.000024] Calibrating delay loop... 858.52 BogoMIPS (lpj=4292608)
[    0.087752] pid_max: default: 32768 minimum: 301
[    0.092734] Mount-cache hash table entries: 512
[    0.097831] Initializing cgroup subsys debug
[    0.102092] Initializing cgroup subsys freezer
[    0.107912] devtmpfs: initialized
[    0.112580] regulator-dummy: no parameters
[    0.116894] NET: Registered protocol family 16
[    0.136778] bio: create slab <bio-0> at 0
[    0.143086] jz-dma jz-dma: JZ SoC DMA initialized
[    0.148208] usbcore: registered new interface driver usbfs
[    0.153749] usbcore: registered new interface driver hub
[    0.159239] usbcore: registered new device driver usb
[    0.164452] i2c-gpio i2c-gpio.1: using pins 57 (SDA) and 58 (SCL)
[    0.170709]  (null): set:249  hold:250 dev=100000000 h=500 l=500
```

```
# lsmod
Module                  Size  Used by    Tainted: G
v4l2loopback           22369  4
snd_aloop              12002  0
snd_pcm                68453  1 snd_aloop
snd_page_alloc          3810  1 snd_pcm
snd_timer              18670  1 snd_pcm
snd                    39168  3 snd_aloop,snd_pcm,snd_timer
sensor_jxf23            9136  1
tx_isp                337860  3
sinfo                  12972  0
8189fs               1114399  0
```

```
# cat /proc/cpuinfo
system type             : bull
machine                 : Unknown
processor               : 0
cpu model               : Ingenic Xburst V0.1  FPU V0.0
BogoMIPS                : 858.52
wait instruction        : yes
microsecond timers      : no
tlb_entries             : 32
extra interrupt vector  : yes
hardware watchpoint     : yes, count: 1, address/irw mask: [0x0fff]
isa                     : mips32r1
ASEs implemented        :
shadow register sets    : 1
kscratch registers      : 7
core                    : 0
VCED exceptions         : not available
VCEI exceptions         : not available

Hardware                : isvp
Serial                  : 00000000 00000000 00000000 00000000
```

```
# cat /proc/meminfo
MemTotal:          91844 kB
MemFree:            4200 kB
Buffers:             804 kB
Cached:            14236 kB
SwapCached:            0 kB
Active:             8768 kB
Inactive:          12384 kB
Active(anon):       1880 kB
Inactive(anon):     4384 kB
Active(file):       6888 kB
Inactive(file):     8000 kB
Unevictable:           0 kB
Mlocked:               0 kB
SwapTotal:       2097148 kB
SwapFree:        2097148 kB
Dirty:                 8 kB
Writeback:             0 kB
AnonPages:          6132 kB
Mapped:            38068 kB
Shmem:               152 kB
Slab:               5980 kB
SReclaimable:       3168 kB
SUnreclaim:         2812 kB
KernelStack:         552 kB
PageTables:          476 kB
NFS_Unstable:          0 kB
Bounce:                0 kB
WritebackTmp:          0 kB
CommitLimit:     2143068 kB
Committed_AS:     197800 kB
VmallocTotal:    1048372 kB
VmallocUsed:       35532 kB
VmallocChunk:     999352 kB
```

Cameras

Puck

Hostname `puck`
IP `10.0.0.122`
MAC `C8:02:8F:82:A7:9A`