PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ FACULTAD DE CIENCIAS E INGENIERÍA



SISTEMA DE ADQUISICION DE DATOS DE UN RADAR DE ONDA CONTINUA EN FRECUENCIA MODULADA MONTADO EN UN VEHICULO AEREO NO TRIPULADO

ANEXOS

Tesis para optar el Título de Ingeniero Electrónico, que presenta el bachiller:

DIEGO ALBERTO CABALLERO CARDENAS

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ANEXO 1: CONFIGURACION RASPBERRY



Se necesita una tarjeta microSD y una PC para poder realizar la configuración.

 Primero se tiene que entrar a la página <u>https://www.raspberrypi.org/downloads/raspbian/</u> para poder descargar el Sistema Operativo Raspbian.



Descargar la versión 3.18 que es la compatible con las actualizaciones de la tarjeta de audio cirrus audio logic card.

Una vez descargada la imagen se tiene que copiar en la memoria microSD, para eso utilizaremos el programa win32 disk imager, esta aplicación es gratuita y nos permite grabar una imagen y hacer una copia de seguridad de la misma a windows.

nage File			Device
1-			
py MD5 Hast	it.		
opy MD5 Hast	n:	 	
opy MDS Hash	11:	 	

Una vez copiada la imagen podemos iniciar el sistema operativo, el siguiente paso es realiza un autoboot al raspberry para que ingrese a un interfaz gráfica automáticamente y podamos ingresar cualquier instrucción.

ANEXO 2: AUTOBOOT Y COMUNICACIÓN ENTRE LA RPI2 Y CIRRUS AUDIO LOGIC CARD



1) Ingresar a la página web :

http://www.element14.com/community/thread/42202/l/cirrus-logic-audio-cardworking-on-the-raspberry-pi-2?displayfullthread=true

El primer comentario de ragnar jensen , nos da una actualización de kernel que nos ayuda a lograr comunicación entre la rpi2 y la cirrus audio logic card

A	ragnar.jensen Mar 27, 2015 11:58 PM
	Cirrus Logic Audio Card working on the Raspberry Pi 2
G 5	Hi all!
	As you might know, Cirrus Logic's main kernel source branch recently switched to 3.18. My first thought was "Hmm, that means the Cirrus Logic card could finally work on the RPi2"
	I have built a couple of 3.18 kernels for my B+ and RPi2 and I have managed to get both models to produce sound 😊
	It's still early days, i.e. there are possibly bugs and glitches to fix, but for those of you who would like to try it out I've made an image file that you can download here: https://drive.google.com/file/d/OBZIaxMH3N501cmJ1bFhMcG1hc0E/view?usp=sharing The file is a 1.3 GB zip. Uncompressed size is 3.1 GB, so it fits comfortably on a 4 GB card.
	The image is based on the standard 2015-02-16-raspbian-wheezy image from the Foundation that you flash to a SD card for a fresh install. I have only added my kernels and set up the configuration files to get the card going. It should work on the older B model with a Wolfson Audio Card too, but I haven't tested that yet.
	Have fun!
	 Ragnar
	35550 Views 📎 Tags: audio, cirrus, wolfson, pi, raspberry, pi2, rpi2

- Una vez descargado la imagen usando la aplicación win32 disk manager montarla en la microSD, luego colocarlo en el raspberry junto con la tarjeta de audio.
- 3) Para probar conectividad tenemos que colocar el comando

```
aplay -l
 aplay -l
 **** List of PLAYBACK Hardware Devices ****
 card 0: sndrpiwsp [snd_rpi_wsp], device 0: WM5102 AiFi wm5102-aif1-0 []
  Subdevices: 1/1
  Subdevice #0: subdevice #0
 card 1: ALSA [bcm2835 ALSA], device 0: bcm2835 ALSA [bcm2835 ALSA]
  Subdevices: 8/8
  Subdevice #0: subdevice #0
  Subdevice #1: subdevice #1
  Subdevice #2: subdevice #2
  Subdevice #3: subdevice #3
  Subdevice #4: subdevice #4
  Subdevice #5: subdevice #5
  Subdevice #6: subdevice #6
  Subdevice #7: subdevice #7
 card 1: ALSA [bcm2835 ALSA], device 1: bcm2835 ALSA [bcm2835 IEC958/HDMI]
  Subdevices: 1/1
  Subdevice #0: subdevice #0
```

ANEXO 3: CONFIGURACION DE UNA MEMORIA EXTERNA EN LINUX

1) Mostramos e identificamos las particiones:

sudo fdisk -l

8 - 0 pi@raspber	rypl: ~						
pi@raspberrypi -	sudo fdis	k -l					
Disk /dev/mmcblk0 4 heads, 16 sector Units = sectors of Sector size (logic I/O size (minimum, Disk identifier: 0	: 15.7 GB, rs/track, 4 f 1 * 512 = cal/physica /optimal): 0x00014d34	15707668480 79360 cylind 512 bytes l): 512 byte 512 bytes /	bytes lers, total s / 512 byt 512 bytes	3067 tes	9040	sectors	
Device Boo /dev/mmcblk0p1 /dev/mmcblk0p2	ot Sta 81	rt E 92 1228	nd Blo 79 51	ocks 7344	Id C	System W95 FAT32	(LBA)
Disk /dev/sda: 80	32 MB, 8032	092160 bytes				Echina	
131 heads, 50 sect Units = sectors of Sector size (logic 1/O size (minimum, Disk identifier: (tors/track, f 1 * 512 = cal/physica /optimal): 0x00032023	2395 cylind 512 bytes l): 512 byte 512 bytes /	ers, total s / 512 by 512 bytes	1568 tes	7680	sectors	
Device Boot /dev/sda1	Start 2048	End	Blocks 7842816	Id	Syst	em FAT32	
pi@raspberrypi -	\$					16	

Con este comando vemos donde está colocado nuestra memoria USB.

2) Establecer una ruta de montaje:

Crearemos una nueva carpeta dentro del directorio /media. La llamaremos PenDrive.

sudo mkdir /media/PenDrive

pi@raspberrypi pi@raspberrypi pi@raspberrypi	~ \$ cd /media /media	/⊓ \$ \$	ls																
pi@raspberrypi	/media	\$	sudo	mkdir	1	/1	me	edi	.a/	Pe	nD	ri	ve						
pi@raspberrypi PenDrive pi@raspberrypi	/media	ş	ts																

3) Configuración archivo fstab:



A continuación, introduciremos una nueva línea teniendo en cuenta que la separación entre cada campo se realiza con el tabulador. Además, al tener un formato FAT32, usaremos vfat en el tercer campo. Esta línea es la siguiente:

- /dev/sda1: dirección de mi pendrive (vista en el punto 1).
- /media/PenDrive: ruta de montaje (vista en el punto 2).
- vfat: formato FAT32.

GNU nano 2.2.	5	File: /e	tc/fstab		Mod	lified
roc		proc	defaults	0	8	
dev/mmcblk0p1	/boot	vfat	defaults	0	2	
dev/mmcblk0p2	1	ext4	defaults, no.	atime 0	1	
dev/sda1	/media/Pent	Drive vfat	defaults	0	0	
a swaprile is	not a swap	partition,	so no using si	waponjott tro	om here on	ı, use
Get Helo	WriteOut	AP Read File	AV Prev Page	AK Cut Text		las
Get Help <mark>^0</mark> Exit ^3	WriteOut Justify	^R Read File ^W Where Is	^Y Prev Page ^V Next Page	^K Cut Text ^U UnCut Tex	<pre>^C Cur P xt^T To Sp</pre>	os ell
Get Help <mark>^0</mark> Exit ^]	WriteOut Justify	^R Read File ^W Where Is	^∀ Prev Page ^∀ Next Page	<pre>^K Cut Text ^U UnCut Tex</pre>	<mark>^C</mark> Cur P xt <mark>^T</mark> To Sp	os ell
Get Help <mark>^0</mark> Exit ^]	WriteOut Justify	^R Read File ^₩ Where Is	^Y Prev Page ^V Next Page	<mark>^K</mark> Cut Text <u>^U</u> UnCut Tex	<mark>^C</mark> Cur P xt <mark>^T</mark> To Sp	os ell
Get Help ^0 Exit ^J	WriteOut Justify	^R Read File ^₩ Where Is	<mark>^Y</mark> Prev Page ^V Next Page	∧K Cut Text ^U UnCut Tex	<mark>^C</mark> Cur P xt <mark>^T</mark> To Sp	os ell
Get Help <mark>^0</mark> Exit ^J	WriteOut Justify	<mark>^R</mark> Read File ∧₩ Where Is	<mark>^Y</mark> Prev Page [∧] V Next Page	∧K Cut Text ^U UnCut Tex	<mark>^C</mark> Cur P xt <mark>^T To Sp</mark>	os ell
Get Help <mark>^O</mark> Exit ^J	WriteOut Justify	^R Read File ^₩ Where Is	<mark>^Y</mark> Prev Page ^{∧V} Next Page	∧K Cut Text ∧U UnCut Tex	∧C Cur P xt <mark>∧T</mark> To Sp	Pos Dell
Get Help ^0 Exit ^3	WriteOut Justify	^R Read File ^₩ Where Is	AY Prev Page AV Next Page	AK Cut Text AU UnCut Tex	^C Cur P xt^T To Sp	os Dell
Get Help AO Exit AI	WriteOut Justify	AR Read File AW Where Is Sec Tools Help mode Help	∧Y Prev Page ∧V Next Page	^K Cut Text ^U UnCut Tex	^C Cur P xt [∧] T To Sp	Pos Dell
Get Help AO Exit AI	WriteOut Justify	AR Read File AW Where Is Subscription Help nedia Help	AY Prev Page AV Next Page	∧K Cut Text ^U UnCut Tex	AC Cur P xt [^] T To Sp	Pos Pell
Get Help AO Exit AI	WriteOut Justify a Edit View Bookmarks Image: Source of the second sec	AR Read File AW Where Is Se Tools Help media Image: Compare the second seco	AY Prev Page Next Page	AK Cut Text AU UnCut Tex	AC Cur P xt ^A T To Sp	Pos Pell
Get Help 0 Exit 3	WriteOut Justify Edit View Bookmarks w → @ @ [m] concy Tree pi b © Doexhop b © Doexhop b © Doexhopds	Read File Where Is	AY Prev Page AV Next Page	AK Cut Text	AC Cur P xtAT To Sp	Pos ell
Get Help 0 Exit 1	WriteOut Justify	AR Read File AW Where Is AW Where Is Se Tools Help media PenDrive	AY Prev Page Next Page	AK Cut Text	AC Cur P xtAT To Sp	Pos Pell
Get Help AO Exit AI	WriteOut Justify ■ Edit View Bookmarks @= ~ > @ @ [m ectory Tree Display for the second > Devenloads > Devenloads > Music > Dython_games []/	AR Read File Where Is	Meda	AK Cut Text	AC Cur P xtAT To Sp	Pos Dell
Get Help AO Exit	WriteOut Justify	Read File Where Is	Mext Page	AK Cut Text	AC Cur P At AT To Sp	bos Dell
Get Help AO Exit	WriteOut Justify ■ Edit View Bookmarks ● Edit View Bookmarks ● ● Downloads ▶ Downloads ▶ ■ Downloads ▶ ■ Music ▶ ■ Music ▶ ■ Downloads ▶ ■ Music ▶ ■ Downloads ▶ ■ Music ▶ ■ Downloads ▶ ■ Music ▶ ■ boot ▶ ■ boot ▶ ■ dev	Read File Where Is	Next Page	AK Cut Text	AC Cur P At AT To Sp	os bell
Get Help AO Exit	WriteOut Justify ■ Edit View Bookmarks ● Edit View Bookmarks ● ● Doshtop > ■ boot > ■ marc > ■ marc > ■ marc > ■ home	Read File Where Is	Next Page	AK Cut Text AU UnCut Tex	xt [^] T To Sp	Pos Dell
Get Help	WriteOut Justify Edit View Bookmarks ✓	Read File Where Is	redia	NX Cut Text VU UnCut Text	xt [^] T To Sp	Pos ell
Get Help AO Exit	WriteOut Justify ■ Edit View Bookmarks Image: Second Sec	Read File Where Is	AV Prev Page Next Page	K Cut Text	xt AT To Sp	Pos ell