GATEWAY

The Official Magazine of the Gippsland Gate Radio & Electronics Club Inc.

November 2016

XMAS Breakup Party

Electric Piano Repairs

Stepper Motor Driving

And More

President's report - page 3

Contents.

Event Queue

November:

18th	November General Meeting
20th	Club Net 8.00 pm - on VK3RLP
20th	Rosebud RadioFest 9:30 am till 2pm **– UPDATED DATE**
22nd	Arduino night, Tuesday 7:30 – Guide hall – To be confirmed – possible Guides conflict
26th-27th	WIA VHF/UHF Spring Field Day
27th	Club Net 8.00 pm - on VK3RLP
26th-27th	CQ WW DX / CW Contest (Always the last full weekend in November)

December:

2nd	Prac Night
3rd	International Day of Persons with Disabilities
10th	Christmas break up at Graeme brown's QTH
11th	Club Net 8.00 pm - on VK3RLP

GGREC PRESIDENTS REPORT by IAN JACKSON VK3BUF

Tuesday the 15th was an extraordinary day. I was able to attend both the FAMPARC and the EMDRC clubs where Andrew Smith and Paul Simmons, two WIA Directors, gave special presentations regarding the dysfunctional operation of the WIA. They were careful and circumspect with their references to other board members, but they still painted a vivid description of inept management over a long period of time on numerous issues.

Directors Andrew Smith and Paul Simmons speak to 3 clubs at FAMPARC

At the lunchtime FAMPARC meeting in Carrum Downs there were 27 amateurs present, while at EMDRC later in the day this figure was closer to 65 persons.

What I found remarkable at both meetings was the essentially unanimous condemnation of WIA management in its present form.

Even before the guests spoke, the attendees were universally scathing over the devastation wrought upon their beloved WIA by what they believe to be an arrogant cartel of inept directors.

The WIA now has a Treasurer and Assistant Treasurer, which is a good thing, but this can only generate limited outcomes. They can work hard to update the MYOB books and produce factual reports from the morass of scattered documents, but they don't set policy and direction. This organisation is still being controlled by the same core of four Directors that presided over the spending of vast sums of WIA money on bookkeeping, reviews and administration in the past year with few tangible results for the WIA membership.

On the evening of same day, 65 amateurs at the EMDRC Club listened closely to the difficulties Andrew and Paul have experienced this year in performing their duties as WIA Directors.

There is little progress on other fronts. The weak WIA submissions being made to the ACMA are still not the result of consultations with clubs and Amateur operators in general. The ACMA

knows this and they are not happy with the WIA board conduct. At Tuesdays meetings, four different radio club presidents lamented over the lack of communication over many years, between WIA management and their affiliated Clubs.

The interactions between the WIA and ACMA on exams and licensing are also under review by the ACMA. Significant new reforms are needed in the exam process in order to let more people enter the hobby, but no such changes appear to be forthcoming. Based upon information within the WIA's own web site, the Director and WIA Vice President, Fred Swainston has a bizarre stranglehold on all processes relating to examinations and Assessors. This happens via a complex web between the many committees he dominates, TrainSafe Australia, (a private company that he owns) and Silverdale Publishing, (another company that he owns), that sells large quantities of training manuals to the WIA. This is a very strange arrangement as this does not appear to meet the WIA's own charter for managing conflicts of interest. Additional disclosure is definitely needed here.

Simultaneously, it appears that, Roger Harrison, and other Directors had made a range of derogatory and inappropriate public statements about what they think of individuals seeking WIA reforms. Because of these actions, the directors are now the subject of legal defamation proceedings.

The WIA Magazine Amateur Radio is a fine publication, but it appears to be subject to internal conflict over who is actually censoring various bulletins on reform that should have been published. It is reprehensible that Directors Andrew and Paul have had to resort to spending their own time and money travelling Australia in order to deliver views to nearly 300 of their own membership base. This extraordinary action would not have become necessary had they had been given reasonable access to the WIA's own journal.

There are other issues that we lack the time and space to detail here, but what we have seen are letters from lots of WIA affiliated Amateur Radio Clubs around Australia coming out and formally calling for the dismissal of the four directors **Phil Wait, Fred Swainston, Roger Harrison and Robert Broomhead**. When this happens, fresh elections can be called so that our WIA can be staffed with leaders that fulfil *all* of the criteria needed for professional conduct in this role.

Ex-Treasurer Chris Chapman describes how WIA Members can visit the WIA Reform Group web site to add their signature to the list of 100 members to call for a General Meeting set to dismiss the four Directors concerned.

It is going to take more than a few touchy-feely goodwill editorials by the WIA president to satisfy the groundswell of dissent that I had observed in recent days. The futures of these four Directors now appear to be untenable. It is difficult to know how this complete loss of confidence will affect the board, but it may be better if they respectfully submitted their resignations now, rather than burden the WIA members with the cost of staging the dismissal proceedings that appear inevitable.

Watch this space.

GGREC XMAS BREAKUP on DECEMBER 10

This will be at Graeme Brown's home at 225 Pryor Road, Drouin on Saturday, the 10th of December from about midday. BBQ facilities will be there, BYO everything else.

The Club Hamper will also be drawn at this event.

This Friday Night

Our guest speaker will be Roger Shembri who will be talking to us about wartime Spy Radio technology. It will be an interesting session.
As usual, we will have a brief General Meeting at 8:00pm, and followed by a short coffee break before the talk begins.

MELB CUP WEEKEND CAMP

The trip to the campsite on the Avon river over the Melbourne Cup Long Weekend was very successful and the weather was quite kind to us. Nine Club members attended the camp, Dianne VK3JDI, Ian VK3BUF, David VK3XMF, Albert VK3BQO, Rob VK3BRS, Graeme VK3BXG, Geoff VK3HGG & Tristan and Michael VK3GHM.

We had a large shaded area all to ourselves, just a few metres from the river. HF contacts were made on both 40 and 80 metres.

Group shot of the happy campers

Rocky bluffs towered over the river

There were two picnic tables in our camp area that came in useful. Each night we had an excellent campfire. The stars at night were big and bright (but it wasn't Texas)

The track into the camp was readily navigated by all cars, even the two-wheel-drive ones.

There are many bends and shallow sandbars in this part of the Avon River

David VK3XMF, Graeme VK3BXG and Rob VK3BRS check out some HF stations

On Day 3 some of the group checked out the tracks upstream of the camp

Notice Board

From the WIA/ACMA

The WIA Office has been advised by ACMA Licensing, that the processing time for applications for new amateur licences or variations to existing licences is around four weeks. Applications will be processed on a first in time basis. These delays are unavoidable and the WIA will keep radio amateurs Informed of any timing changes. We thank you for your patience.

GGREC Sunday night Net

Want to know the latest GGREC Club news and details of upcoming events?
If you want to be kept up to date then you need to call into the **GGREC Sunday Night NET**.
The NET is held every **Sunday** at **8:00 PM** sharp on **VK3RLP 439.475 MHz, 91.5Hz** tone access.
Don't miss out!

Corrections to the Magazine

If you find any general errors in the magazine, contact the editor, Paul VK3TGX
If however, you find errors in the **General Meeting Minutes**, contact the **club Secretary**.

Contact details are on the last page, or refer to the club membership list.

"In the 60's, people took acid to make the world weird. Now the world is weird and people take Prozac to make it normal.."

From The Editor

Well here we are, the last official magazine for 2016. Last year I did end up making an extra Christmas edition, As last year it all depends on me finding enough Christmas content to make the whole idea worth-while.

So get out your camera's and shoot some Christmas pictures my way, either of the club's festivities, or how you have prepared your QTH for the season.

Hopefully I'll get enthused and hoist some decorations up my tower etc.

Maybe we should have tried for some Arduino Christmas projects, however it would appear most members are at the beginnings of the learning curve, not quite the place to be if you want to bang out a few processor driven trinkets in time for the silly season.

- Not that I am disappointed etc., we are all headed in the right direction and that is good.

As for my QTH, I seem to be slowly burying myself in projects; the shack seems to be getting more and more congested. We recently had a council hard rubbish collection, unfortunately the way it's done does not fit in with my ideals of recycling. The other year I put out a few video monitors, assuming they would be taken to a recycle centre – wrong, then were chucked into the back of a garbage truck and crushed in with all the other garbage, off to land fill just what the planet needs- more landfill!

Now if I have a deceased monitor I take it to office-works where they have a computer recycling service available. (Yes, they could be as bad as the council, but at least I'm trying.)

So with the incentive of a hard rubbish clean-up you'd think my piles would decrease, however the opposite is usually the case – oh look there's a nice length of angle iron (old bed frame) or look at those displays, I could make an Arduino ….. project for the magazine.

You've all seen my various projects, do you have any suggestions.

So where are we going in 2016, as far as this magazine is concerned? Are you happy with it.

I did receive a comment from one of the club's ladies, that it is too technical for her – yes I could point out that the club is Radio & Electronics, true, but the club is also about its members so non-technical material is welcome. I did suggest she write something, however it would appear I have scared her off, as nothing was ever received.

Personally, my interests are Radio, Electronics, Computers, & Photography. I did have some great troubles photographing LED displays for some of the articles I have recently done. I was all but ready to do an article on the subject – maybe next year.

Other than that I have a few more Arduino idea's in my head – more clocks etc.

It would be nice to do an all singing & dancing radio project, however I've don't have all the equipment to go there, spectrum analysers etc. are usually beyond my budget, I'll leave that sort of project to those who have a much more fully appointed shack.

Paul VK3TGX

The Electric Piano – A Fender/Rhodes ‘kit’

No legs,
No problem,
The speaker box looked strong enough

A while ago I was approached to make a lead to connect an electric piano to its amplifier/speaker box.

The owner had acquired the piano, and then sourced the speaker from another source.

Unfortunately it did not come with the appropriate lead. Normally (according to the web) they use either a 4pin or 5 pin din lead, however somewhere in its life the keyboard had had its 4 pin din socket replaced with a 4 pin cannon XLR connector. So how had the wires being transferred from the din to the XLR, by the pin numbers, or from the top pin to the top pin etc. etc.

Unfortunately one of the pins carried 34V from the speaker to the keyboard to power it, if I had it wrong, smoke was sure to ensue, so I had no option but to ask the owner to bring it all around to my place. Of course my guess was wrong.

So how do you tell? You could pull everything apart and trace all the circuits, what a lot of work. However some multimeter probing can usually tell the story. In this case, both ends had other sockets, so I could easily find the earth pin. There was also two audio feeds – these tend to be high impedance, yes both ends use the centre pins, that just leaves one with an obvious capacitor (the resistance reading slowly climbs) this has to be the 34v power line.

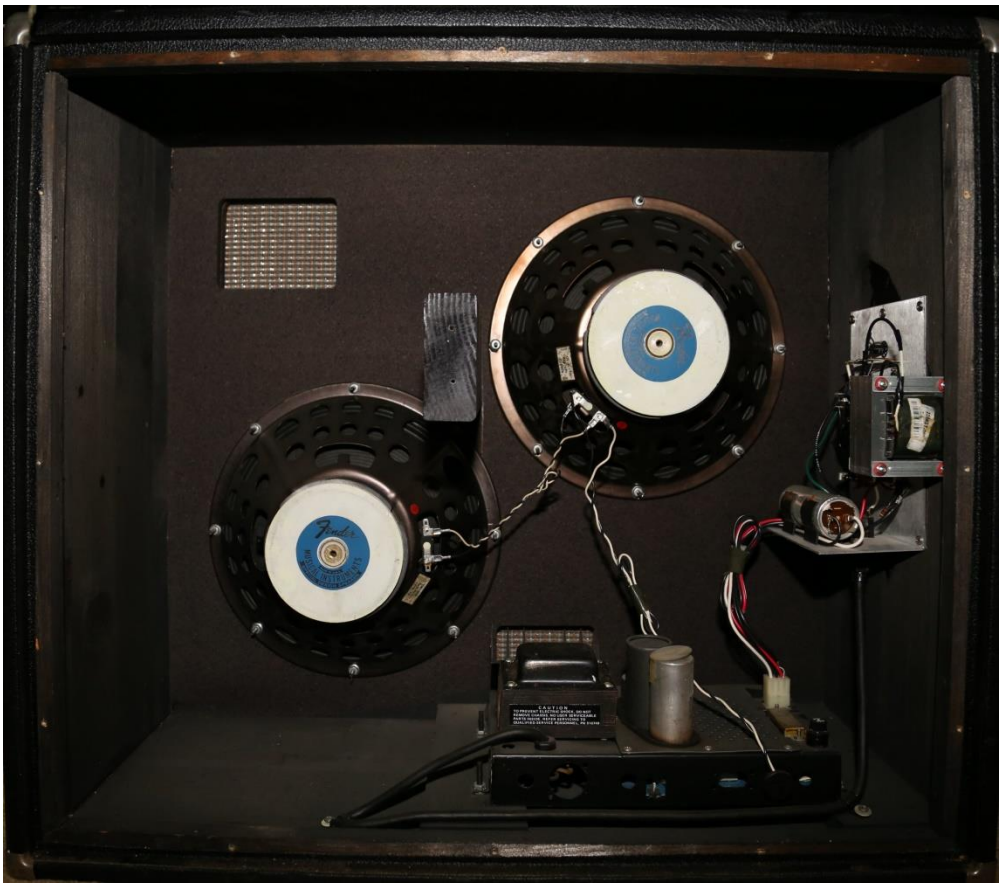
With the wires swapped around I powered it it, but did it work – NO!

I connected another amp (Panasonic ‘Ghetto blaster’) to the RCA audio out on the pickup coils, not much audio at all, but that was kind of what I expected, all ok here.

So I then fed some audio (from the ‘Ghetto blaster’s radio) into what I thought were the audio in’s on the powered speaker, one was dead, the other gave heaps of sound – speaker ok?

So it was looking like the audio out module on the keyboard was at fault. After some prodding about in turned out to be a dirty contact on one of the quarter inch jacks not letting anything through. Open circuit insert jack, Easy fix.

A lot of pro audio gear have effects ‘insert jacks’, these are quarter inch TRS (Tip, Ring, Sleeve) sockets that go inline with the audio path. You plug in an external effects box, it takes the audio out on that jack, modifies it, then feeds it back to the same jack so the signal can resume its journey through the system. With the plug removed, the socket’s contacts should bypass it.



This only left that non responsive audio pin for investigation.

So off with the speaker back, I was not overly impressed, no wonder it wasn’t that loud, what a small amplifier! Both speakers were wired in parallel, the other audio input just looped to a quarter inch jack for connection to another powered speaker.

To verify this, I connected a powered mixer and speaker – all ok

Time to put the lid back on.

So how did it all sound, well all I could think of was piano in name only, not in sound.

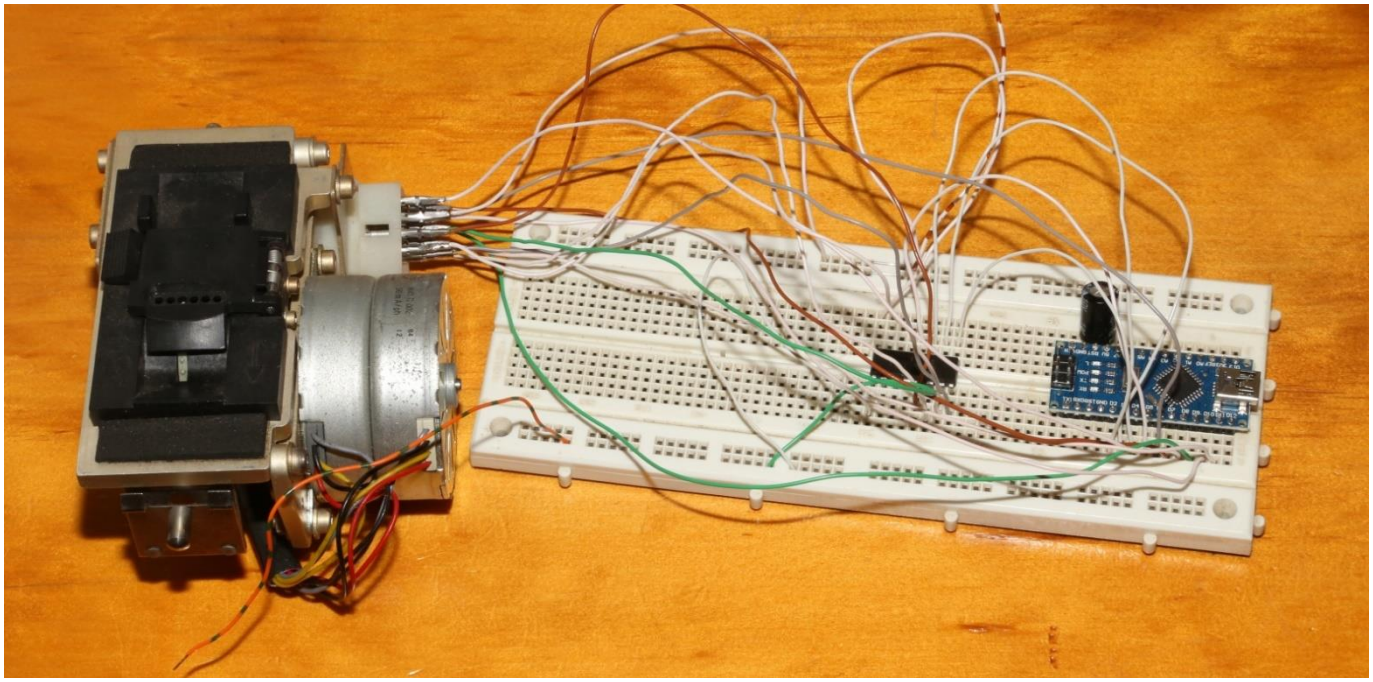
It had all the hammers etc. of a traditional piano, but little of the tinkle-tinkle of a piano, it sounded more like a pile of transistorised oscillators you’d find in an early gen analogue synth.

The other oddity was the ‘stereo’ ability (when connected to another amp/speaker) The ‘stereo’, or to use the correct term ‘vibrato’, is a function usually associated with an electric organ, where the output is pulsed/oscillated back and forth between the two audio channels – the ‘depth’ and speed of the effect being adjustable from the keyboard.

So much for a true piano sound.

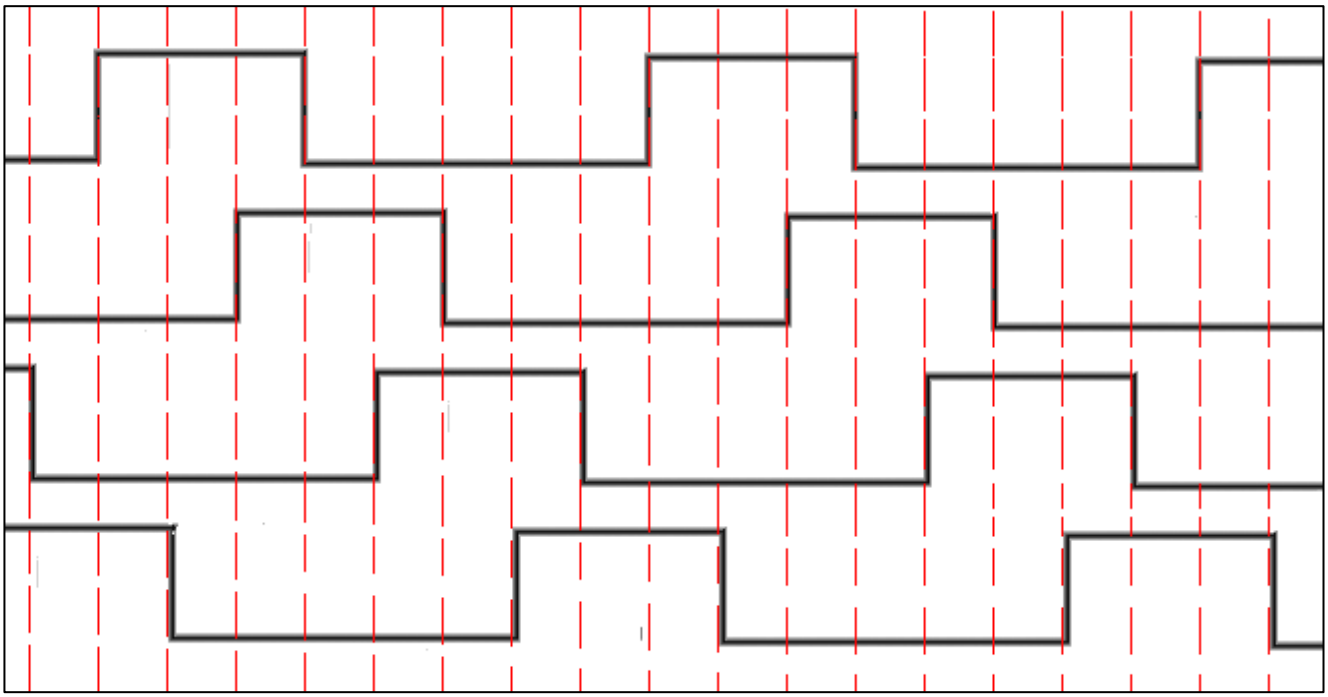
Paul VK3TGX

Stepper Motor Driving – More Arduino



When I worked at Telstra, I used to fix telex machines, the one Ian VK3BUF currently has at the club shack surely would have come through the work shop to be refurbished/repaired a few times in its life. Later on Telstra moved onto Sagem electronic telex machines, the device above next to the proto board is a paper tape reader from a Sagem TX-20.

I brought it down to the Arduino group meeting last Tuesday, mainly to show Ian. Later on I thought it cannot be that hard to connect it up to an Arduino and make it work. The only extra part I needed was a ULN2003 driver IC, I didn't even need the customary diodes to prevent switching transients from the motor's coils upsetting things, as these are included in the ULN2003. The stepper motor on this tape reader has 4 coils of about 250 ohms, and according to the motor, should not exceed 90mA per coil. With my intended 12V supply, that was not going to be an issue. My biggest challenge was figuring out which wire was which, in the end, trial and error sorted it out. I wrote a very simple program that simply pulsed the 4 coils in sequence, but then I found it seemed to work better if I switched on the next coil before turning off the previous. I had gone from 4 phase to 8 phase drive.



```
48 void loop() {
49      digitalWrite(Ph1, HIGH);
50      digitalWrite(Ph2, LOW);
51      digitalWrite(Ph3, LOW);
52      digitalWrite(Ph4, LOW);
53      delay(pause);
54      digitalWrite(Ph1, HIGH);
55      digitalWrite(Ph2, HIGH);
56      digitalWrite(Ph3, LOW);
57      digitalWrite(Ph4, LOW);
58      delay (pause);
59      digitalWrite(Ph1, LOW);
60      digitalWrite(Ph2, HIGH);
61      digitalWrite(Ph3, LOW);
62      digitalWrite(Ph4, LOW);
63      delay(pause);
64      digitalWrite(Ph1, LOW);
65      digitalWrite(Ph2, HIGH);
66      digitalWrite(Ph3, HIGH);
67      digitalWrite(Ph4, LOW);
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71      digitalWrite(Ph3, HIGH);
72      digitalWrite(Ph4, LOW);
73      delay(pause);
74      digitalWrite(Ph1, LOW);
75      digitalWrite(Ph2, LOW);
76      digitalWrite(Ph3, HIGH);
77      digitalWrite(Ph4, HIGH);
78      delay(pause);
79      digitalWrite(Ph1, LOW);
80      digitalWrite(Ph2, LOW);
81      digitalWrite(Ph3, LOW);
82      digitalWrite(Ph4, HIGH);
83      delay(pause);
84      digitalWrite(Ph1, HIGH);
85      digitalWrite(Ph2, LOW);
86      digitalWrite(Ph3, LOW);
87      digitalWrite(Ph4, HIGH);
88      delay(pause);
89  }
```

As you can see, the stepper motor code is quite simple, the delay is currently 20ms, I was going to see how it faired pulling some tape through, but a search or the shack failed to locate any, oh well, it looks like I'll have to visit the club shack and cut some tape with Ian's telex machine.

The next stage is to read the 5 contacts that sense the holes, and I'll have a functioning tape reader.

After that probably the best approach would be to convert the 5 element baudot code to ASCII. This will require 2 lookup tables, as the 5 element code has two shift states, numbers & letters. In the code there are two special shift characters that tell you when to swap character sets, they did it that way as 5 bits gives only 32 combinations, not enough for the alphabet, numbers and punctuation marks.

They could have used a larger number of bits, but that would have slowed the whole system down.

Even with this shift mechanism, lower case characters were left out – crazy you would say these days, but back then they were competing with Morse code, so everyone was accustomed to upper case only.

Later in its history, an extra shift state was inserted into the system, providing for lower case letters; however I have never seen a machine, nor know how the modified code works.

99% or the machines out there don't support it.

Well that's how the 'project' sits at the moment,

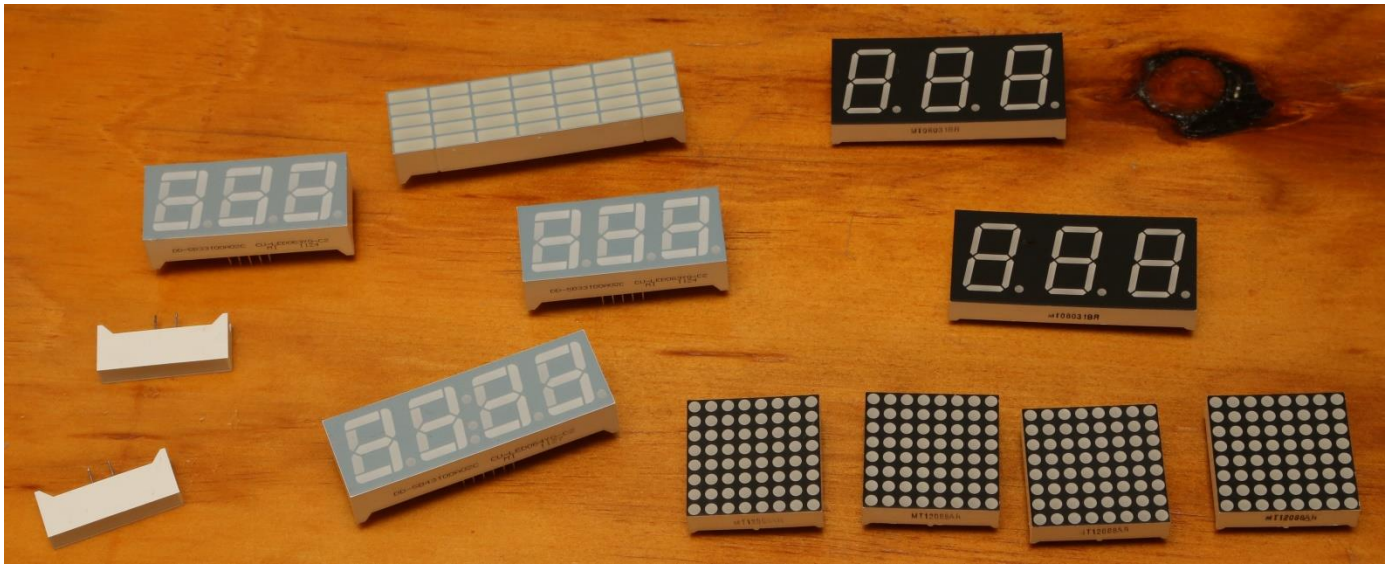
I'm not sure if I'll complete it as I don't have a particular use for it. The motor runs, I can see the contacts, so that's where it will probably lie. Although the Baudot to Ascii converter routines will be useful for some upcoming projects, so completing the code is probably a good idea.

So does anyone have a use for a paper tape reader?

Does anyone have any paper tapes to read?

Paul VK3TGX

Recycling It – LED displays



When it comes to displays for a project, you almost cannot go past the good old LED.

Yes, if you need something more flash, an OLED or LCD panel can present a lot more information, however the learning curve to drive them can be a lot steeper. If you are into the Arduino's then there are usually library's available that can talk to these more complex displays, so hopefully all will be ok, However if you would like to keep it simple and not have to rely on someone else's code – i.e. you prefer to pull a pin low and send some current through a led, a lot simpler, then these may be your ideal.

(Sure driving a multiplexed display is a tad harder, but you can get there 'slowly' just light one digit, then try for two etc.)

Anyway, back to the Recycling theme, these all came from treadmill exercise machines, put out on council hard rubbish days. The 'grey' ones are green, the 'back' units light up red.

- So the price it right. – zero.

One machine also had a 2.5 horse power DC motor – wind generator anyone?

Another source of displays is old DVD players, Digital set top boxes, etc. again, these can usually be scored fairly easily – like from our club rooms when the set top box died a few months back.

They are rarely worth repairing (usually the power supply) so alternative uses are the only options other than creating more land fill – I'm sure the world does not need any more.

The other problem with digital TV receivers, is they have changed the specs a few times, meaning old box's, even though working perfectly, are junked because they cannot receive all the new free to air channels.

Paul VK3TGX

Learn Morse code in 4 hours from 'taps on your head'

Posted by Jason Maderer-Georgia Tech November 1st, 2016

A new system can teach people Morse code within four hours using a series of vibrations felt near the ear.

Participants wearing Google Glass learned it without paying attention to the signals—they played games while feeling the taps and hearing the corresponding letters. After those few hours, they were 94 percent accurate keying a sentence that included every letter of the alphabet and 98 percent accurate writing codes for every letter.

"This study was different and surprising. People were tapped on their heads, but the skill they learned was using their finger."

The system uses passive haptic learning (PHL), a method that has previously taught people to read braille and to play the piano. It also improved hand sensation for those with partial spinal cord injury.

Researchers decided to use Glass for this study because it has both a built-in speaker and tapper.

Participants played a game while feeling vibration taps between their temple and ear. The taps represented the dots and dashes of Morse code and passively "taught" users through their tactile senses—even while they were distracted by the game.






“[C]ommon devices with an actuator could be used for passive haptic learning,” says Thad Starner. (Credit: Georgia Tech) The taps were created when researchers sent a very low-frequency signal to Glass’s speaker system. At less than 15 Hz, the signal was below hearing range but, because it was played very slowly, the sound was felt as a vibration.
Half of the participants in the study felt the vibration taps and heard a voice prompt for each corresponding letter. The other half—the control group—felt no taps to help them learn.

Participants were tested throughout the study on their knowledge of Morse code and their ability to type it. After less than four hours of feeling every letter, everyone was challenged to type the alphabet in Morse code in a final test.

The control group was accurate only half the time. Those who felt the passive cues were nearly perfect.

“Does this new study mean that people will rush out to learn Morse code? Probably not,” says Thad Starner, professor at Georgia Tech. “It shows that PHL lowers the barrier to learn text-entry methods—something we need for smartwatches and any text-entry that doesn’t require you to look at your device or keyboard.”

Previous research on PHL used custom hardware to provide the tactile stimuli, but here researchers use an existing wearable device.

“This research also shows that other common devices with an actuator could be used for passive haptic learning,” Starner says. “Your smartwatch, Bluetooth headset, fitness tracker, or phone.”

“In our Braille and piano PHL studies, people felt vibrations on their fingers, then used their fingers for the task,” says Caitlyn Seim. “This study was different and surprising. People were tapped on their heads, but the skill they learned was using their finger.”

Seim’s next study will go a step further, investigating whether PHL can teach people how to type on the trusted QWERTY keyboard. That would mean several letters assigned to the same finger, rather than using only one finger like Morse code.

Researchers presented the results in Germany at the 20th International Symposium on Wearable Computers. The National Science Foundation supported the project.

Source: http://www.news.gatech.edu/2016/10/27/learning-morse-code-without-trying

Based on the above article here is a Haptic Morse code reader on Instructables.

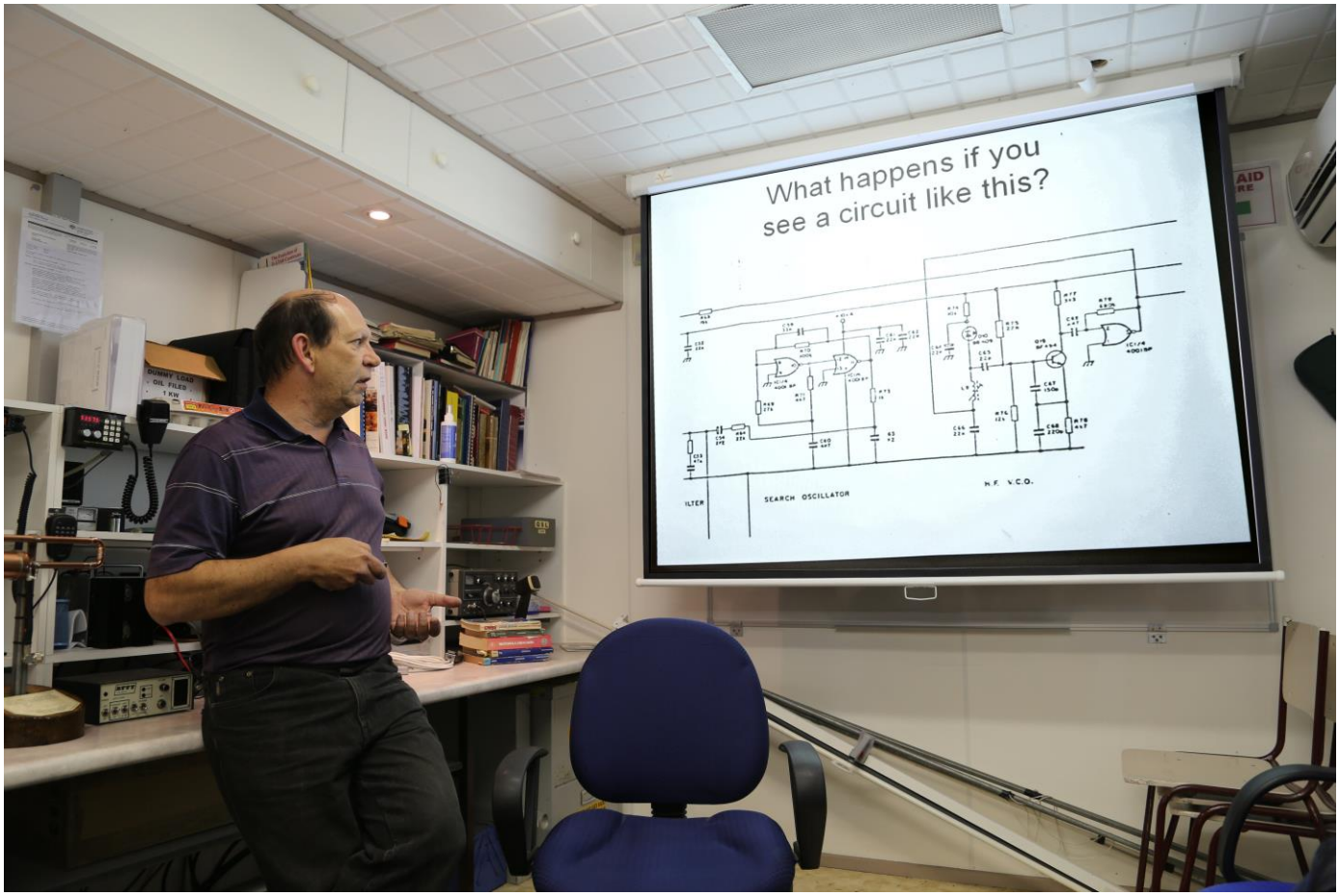
http://www.instructables.com/id/Feel-The-Code-A-Haptic-Morse-Code-Reader-Part-/

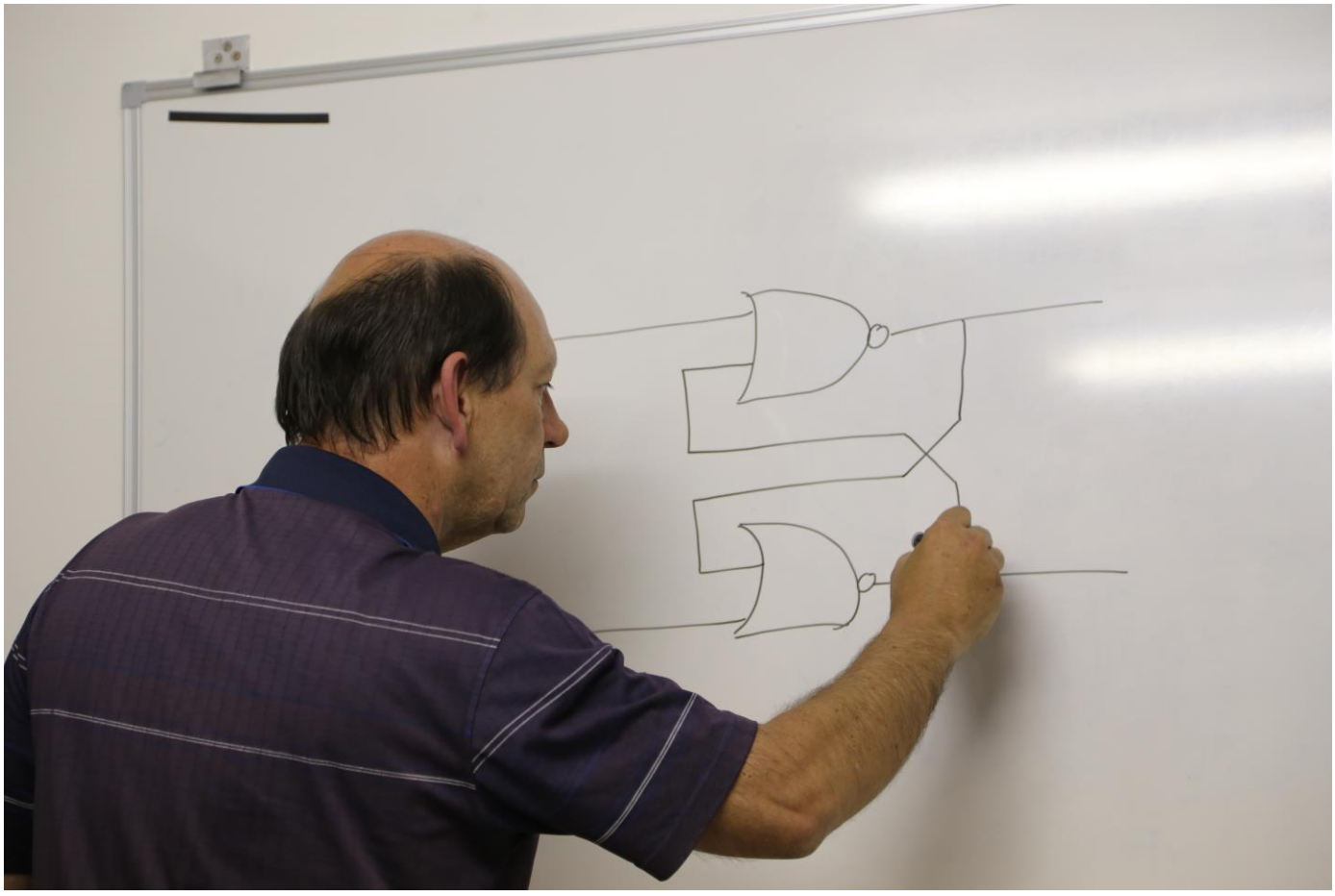
Arduino or bust.

Albert VK3BQO

Since the Arduino sessions started, I have not written any updates as to how the evenings are progressing; until now.
Due to the Cup weekend, the first Arduino session for November was shifted to Tuesday 8th of November. Twelve attendees learned some more tricks associated with writing sketches for the Arduino UNO board. With eight sessions now completed, some are now able to see light at the end of the tunnel and are writing their own sketches however small they may be. Some are even venturing into more complicated programs and with a little dedication, all participants should be capable of getting their own projects up and running. I must admit that although there has been quite a bit of research done to ensure the more important topics have been covered first, it has been a very interesting journey for me as well because I was not conversant in writing code in Arduino. In saying that though, I found that it is every bit as useful as normal C or C++ code therefore I have added to my knowledgebase by doing this. For those involved in these sessions, next year will see a slight change in the venue requirements. Unfortunately the Club cannot continue to foot the bill for the Guide Hall rental, therefore participants will be required to pay $4 per session to continue having the comfortable surroundings that we have enjoyed over the last couple of months. The Committee will work out how to levy payments and let us know how it will work. If you decide that it is not worth paying for these privileges please let the Committee know now so that adjustments can be made accordingly. Although it is likely that I will catch up with most of you at the Club Christmas Breakup, I will take this opportunity to wish everyone a great and safe Christmas and look forward to what 2017 has to offer. Also I would like to thank the Committee for its support for the Arduino sessions. 73s

Ian Gate


What happens if you
see a circuit like this?
SEARCH OSCILLATOR
H.F. V.C.O.



General Meeting Minutes

Date : 21 Oct 2016
Start time : 20:08
Location : Club rooms.
Chairperson : Ian Jackson 3buf
Minute Taker : Michael Van den Acker 3ghm

Present : As per attendance sheet

Visitors:

Apologies : As per attendance sheet.

Correspondence received : listed and tabled

Correspondence sent : listed and tabled

Treasurer's report : As tabled
Read & Moved : Graeme 3bxg **Seconded :** Bryan 3foab **Carried :** Yes

New Callsigns :

Previous Minutes : As per Gateway magazine
Moved : 3buf **Seconded :** 3kto **Carried :** Yes

Business arising from the previous minutes :
Request for Hall rental 4 nights $42.50 per evening plus one extra before Christmas. Waiting for reply from the Guides.

New business :
Responses from other clubs to Ian's letter regarding the WIA. Other clubs are having issues. Two of the Directors of the WIA are doing a roadshow and having meetings to talking to members. Meeting on Nov 15th at FAMPARC in the afternoon (2pm) with GGREC providing the BBQ from 12:30pm then the evening meeting at EMDRC 8:00pm with BBQ beforehand at 6:30pm.

Christmas GGREC BBQ at Graeme 3bxg 10th December with thanks to Leigh for the offer. Club hamper to put together. Graeme to purchase a suitable box/container.

Next Foundation upgrade weekend on 12-13 November in club rooms. Graeme 3bxg.

Reg 3uk. He is fine and has operating radios & antennas. Jenny is doing as well as can be expected.

Meeting closed : 20:39

Next Committee Meeting : 1st Tuesday of the month
Next Prac Night : 1st Friday of the month
Next General Meeting : 3rd Friday of the month

Club Information

Meetings 2000hrs on third Friday of the month at the
Cranbourne Guide Grant Street Cranbourne
Prac nights first Friday in the Peter Pavey Clubrooms Cranbourne 1930hrs
Visitors are always welcome to attend

Office bearers

President	Ian Jackson	VK3BUF	Repeater Officer	Albert Hubbard	VK3BQO
Admin Sec	Michael Van DenAcker	VK3GHM	Web Master	Mark Clohesy	VK3PKT
Treasurer	Graeme Brown	VK3BXG	Magazine Editor	Paul Stubbs	VK3TGX
General 1	Rob Streater	VK3BRS	Property Officer	Bruno Tonizzo	VK3BFT
General 2	Max Hill	VK3TMK	Secretary	Ian Jackson	VK3BUF

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater VK3RDD – Currently de-commissioned until further notice - *sorry*
70cm Repeater Cranbourne VK3RLP In 434.475MHz Out 439.475MHz CTCSS 91.5Hz
VK3RLP Repeater supports Remote Internet access (IRLP), Node 6794.
70cm Repeater Drouin VK3RWD In 433.575MHz Out 438.575Mhz CTCSS 91.5Hz
Simplex VHF - 145.450MHz FM • Simplex UHF - 438.850MHz FM
VK3RLP Beacons 1296.532MHz & 2403.532MHz

Membership Fee Schedule

Pension Member rate $25.00 Extra Family Member $20.00
Standard Member rate $40.00 Junior Member rate$25.00
Fees can be paid by EFT to BSB 633000 - Account 146016746.
• Always identify your EFT payments.
• Membership Fee's Are Due at each April Annual General Meeting.

Magazine Articles to editor@ggrec.org.au or vk3tgx@gmail.com
All other Club correspondence to: secretary@ggrec.org.au
or via Snail Mail : GGREC, C/O Ian Jackson, 408 Old Sale Rd, Drouin West 3818
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