Spet 12th. No planes in sight

The magnetic north project is mostly down to just a lot of work accomplished to date:

The rough drat of the bread board is done. I am going to use a breadboard to hold the LDRs The breadboard will make the structure; that is put the sensors confidently in place. Thee will be two rows of about 45 total. They will be staggered such that about one time in three, there will be two LDRs HIGH. Usuall there will be just a single high. I want to ignore the second high. From a software and transparency perspective, this is easy. But I want a record of when this happens and I want this in the saqlite3 database.

Every sensor has its own resistor. This ppears to be mandatory. I should have known that, I think.

The wiring is pretty straightforward. The LDR is + on one side and the sensor input is on the other side. But the sensor side is also grounded with a large ohn resistor. There is some question about this, but I am thinking about 5K ohms and I am thinking that the specifics are not critical. 4 to 6k should be fine. This is a question; I need to look more closely at this. I have it on good authority that less than 2 v is negative and greater than 3 v is positive high. I also have it on good authority that the LDRs are a bit temperamental and may degrade over time. I ordered some potentiometers that will help with this study,

The programming is done to a descent prototype. I have six LDRs and they are nicely giving a positive with light. They have been tested against the red laser and seem fine. I was using a setup ‘input pullup’ but then dropped it and it seems to work fine. There are six ‘if’ statements. That is all there is to it. (while statement is not the correct conditional.) In the C++, the output is the regular Serial.println command. So the final program needs to have no extra print commands.

The python is interacting with the C++ with few problems.. If the serial monitor is on (Arduino) the python cannot fine it. When this is turned off the python finds the input and nicely puts it into the database. This is all the same as the gravit project. At present the Python is putting the readings to two decimels but adding three periods. I need to look into this make sure that they ‘long’ , not strings.

Dangling questions: the C++ includes the ‘delay()’ function. This is thousandths of a second. So delay (1000) is ‘wait one second’ Taking a reading might be viold loop delay (600000) would be “run this program every ten minutes” That weems a bit awkward. I need to look into this.

Also, the laser should be turned on and off as needed. I left the laser on all night twice and needed to change the battreries. (three AAA batteries.) I have suspicions that the LED laser could just be left on.

I am considerding a strategy that would involve perturbing the laser and evaluation the direction from the behavior of the swing. This would involve a mechanical action driven by the microcontroller. I see this as an elegant and fairly maturatin of this experiment.

The gross setup is establish in my mind. I want the detectyor apparatus and the Arduino mega on the chimney wall. I want it movable within very strick quantum states. And I want that quantum state entered into the initial softward and I want the database to include eht equantum state.

The range of the s=dectro stae is about 2 inches. If this is not enough I will move the whole decector to a new position, make en entry into either the C++ of the Python. The adjustment will be made in the software such that the database always has the correct value.

The data will be a bit crude, defensible and very transparent. What will I find? That is the whole point.

Let’s move forwards with turning the laser on and off. Just use a relay and the regular three AAA batteries in series.

I do not know what is up with Aceson. He knocks on the door, “womeone is after me” I need help” what. I told him to call the police.

I do not think I should need a power supply for the relay.

<https://youtu.be/XiOcxyyTxy4?si=ryFJP_zZVH9Av7aW>

9/16/2023

Magnetic north: The stuff ordered has come. I immediately looked at the potentiometers. They are rated for the size of the range of the ohms. That is. The lowest to highest resistance. Like 10K ohms is 10K at the most resistance and then graduated down. Depending on the ohms of interest, different pots can be used.. I put a 10Kohm pot where the 5K dropdown is and studied it. The pot will not read a HIGH if the downdown goes below 4K so the 5k looks fine and the larger value should be fine. I am forced to move to 6.1k ohms because I am out of the 5k.

The test is with the elegoo LDR. I put some of the suspect LDRs to this test and one of the seven did not work at all . they are clearly labeled . The bad LDRs have whitout on the face.

I have a big stash of the chazon LDRs and looking into bending them properly such that they will sit nicely and consistently on the breadboard. The wiring is straightforward:+ to LDR then LDR to sensor and to the pull down resistor. So there will be fourty of these in a row,

9/19/2023

. I tried to isolate th six ldrs from the rest of the 42. That worked perfectly. Then I added six more still works then I added up to 18, still works. Suddenly the program is running smoothly. The IF statements are finding the positive sensor and just sending out that signal.

The Arduino seems to need the ‘println’ I know that is adding extra stuff to the python, but the python does not seems to mind. The actual number has a … at the end . I am not sure that this is a problem. Also the field for the python script only included the path, not the name. ??

So,

What numbers should be assigned to the respective LDRs. I thknk the best way is to assign the ldr to the location with the breadboard pin. This would be in millimeters. Wait maybe I should move straight to minutes (60th of a degree). Yeah….

Let’s put a value of 100 minutes where I now have zero. I am going to have to make some definitions. I thknk it would be best to ignore the previous scale; add that in later, as needed.

Hmmm/ Let’s say 20 to 45 minutes is my range

Information: The breadboard and the scale that I have been using. The scale is from Paint and has been pretty thoroughly checked.

**The breadboard: 62.5 holes is 130 minutes we need a definition. Let’s use this.**

One hole is 2.080 minutes. The present array has one LDR at every hole, so this is spread of the individual sensors. I put his on a sheet in excel ……../graduation for magnetic north.

This little table gives us the ID for the sequential light sensors.

Humm add a arbitrary number right at the beginning, (I added a hundred to the raw number) big enough that there will never be a minus number. Like add 100. (done) Then move that number up and down at discrete increments as the detector is moved. The detector will be about 60 minutes, about a degree, but if this is not enough then this will not be a problem. Add the number in python or C++? Let’s put it in Python. When the activity starts, I am always messing with the Python more. (NO, I added it to the raw value in C++) Big adjustments can be adjusted in Python. I am not sure that they will be needed.

The C++ is started. I am figuring on 6x7 = 42 sensors. They are in 7 sets of six . the order up down or down up does not matter as long as it is consistent.

A strategy would be to put it all together without the LDRs and then add them one at a time. This could be a good platform for QC. Quite a bit of work, but not many real questions.

The opnly or biggest question: when the whole is put together will the voltages allow the 42 sensors to work. I have evidence going both ways.

Finish the C++ and then add the sensors, like 6 at a time.

Sept 26

The above issues did not happen. There were programming issues and wiring issues, but no real obstacles.

The first prototype is on the wall. I have mega input 23-53 on an LDR and have checked the whole thing fairly carefully. I do not have the relay modules and am leaving the laser on. (I think the conbstraint is the batteries, not the laser. I have tons of AA batteries. I have reason to believe that three batteries will last several days. An alternative power supply would be cool. The realy modules should be here someday.)

I found a technique for the delay of the readings: If the delay is just ‘stop everything’ the delay() will work. I have a for loop containing a delay (60000) . So the loop represents a minute. Ten i++ means ten minutes. A really good video:

https://youtu.be/IyxY1uQyY9U?si=VTS0X-Sr1YLzn9tv

the millis() is required if the stop and wait is complex. But for my application, a simple delay should be fine.

The python is still adding blank lines to the database. I just tried adding a “if (in\_data): “ it gave no error, but do not know .

The laser is working with the ldrs just fine. The ambient light does not seem to be stimulating the signal. I still want to add some sort of collar, but it does not seem to be an issue. I restructured the board on the wall such that it is stable, but more flexible. I added 100 to the LRD hard values

9/27/2023

The relay modules arrived. They look fine. I had a bit of trouble chasing down the video. This is it:

<https://youtu.be/g6k8sPJyif8?si=SsUjgy1lryJukReI>

I do not see any problems. The mega 2650 is on the wall. I tried to set it up to take a reading every 10 minutes using the technique above’ use a four loo to count minutes and then a delay for 6000 to make each I a minute. It works, but has bugs. Not sure. Truthfully, I am hoping that they will just go away.A lot of things are working fine:

The overall light seems fine. Even with the basement light on, the LDRs do not seem to pick up strays

The laser is fine for stimulation

The wiring and overall setup look good even for a permanent setup.

The software looks fine.

There are bugs though.

I was going to leave on the laser, but now I have the modules. I want to put a little breadboard, separate from the LDRs and run the laser control through that, using the same mega board.

So, the logic:

Void () loop:{

Wait ten minutes

Turn on the laser

Wait delay (550); just for grins and giggles

Take a reading

Turn off the laser

Perturbate the magnetic needle. I have been thinking about this. This would be another relay module

}

Repeat.