<Coding Club>

BEAU HARRISON

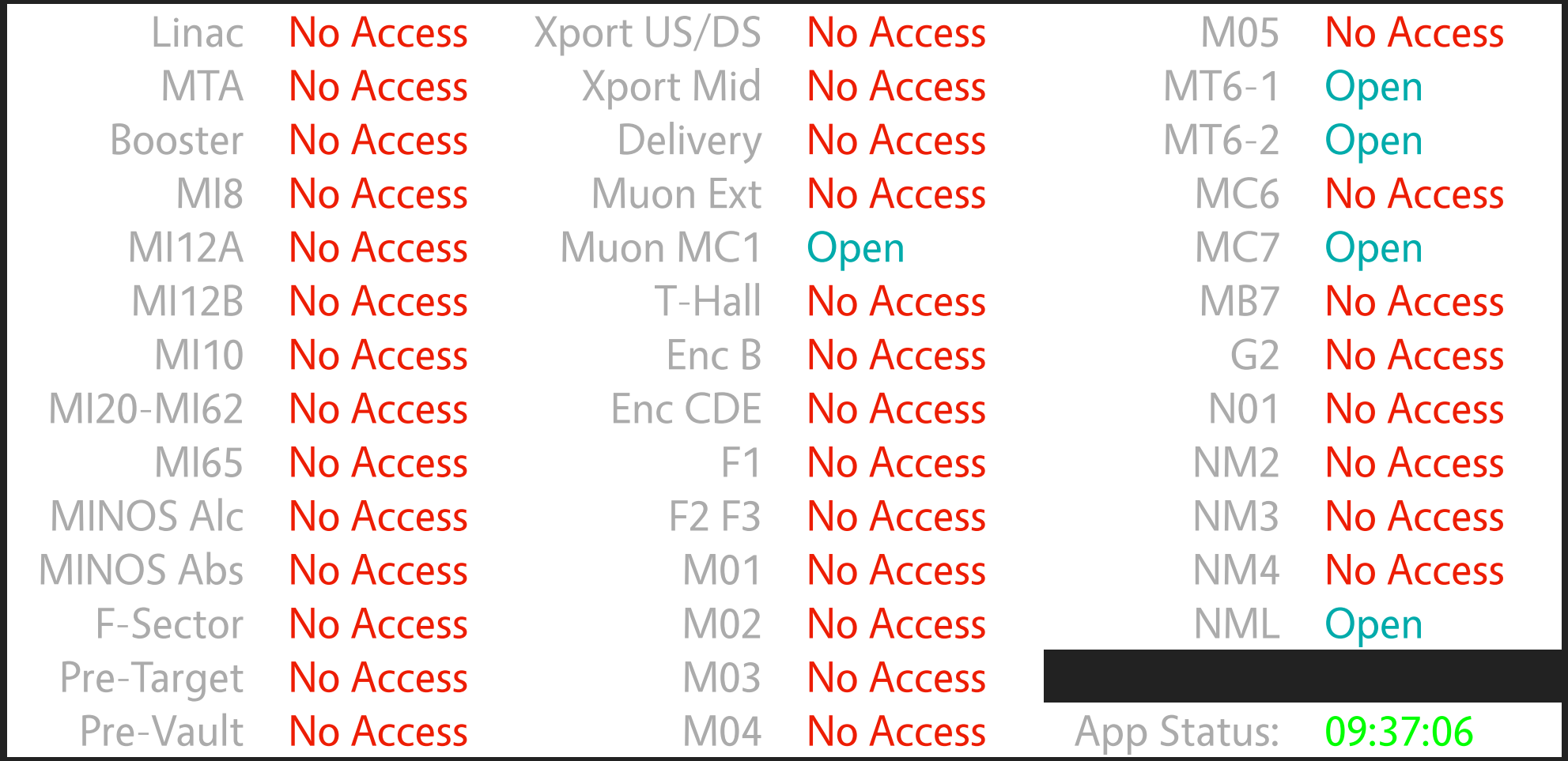
Accelerator Division

Operations

Speaker notes

While I have taken classes that require some programming, I consider myself a self-taught programmer. I've spent seven years in Operations creating tools to solve the most annoying problems. Most of them are defunct now but I solved a problem and learned something in the process.

ENCLOSURE STATUS



Speaker notes

With the help of Kyle, this display is up all the time in the Main Control Room. It can be controlled from ACNET or from a web page. It is simple application in principle but has many hooks and users.

SHIFT ROSTER

Ops Shift Roster

Shift Title

Day Shift Roster

Operators

Maxwell Monningh	CC
Cassidy Mayorga	CC
Christopher Olsen	CC
Kelli Rubrecht	CC
	CC

Submit

Security, Privacy, Legal

Speaker notes

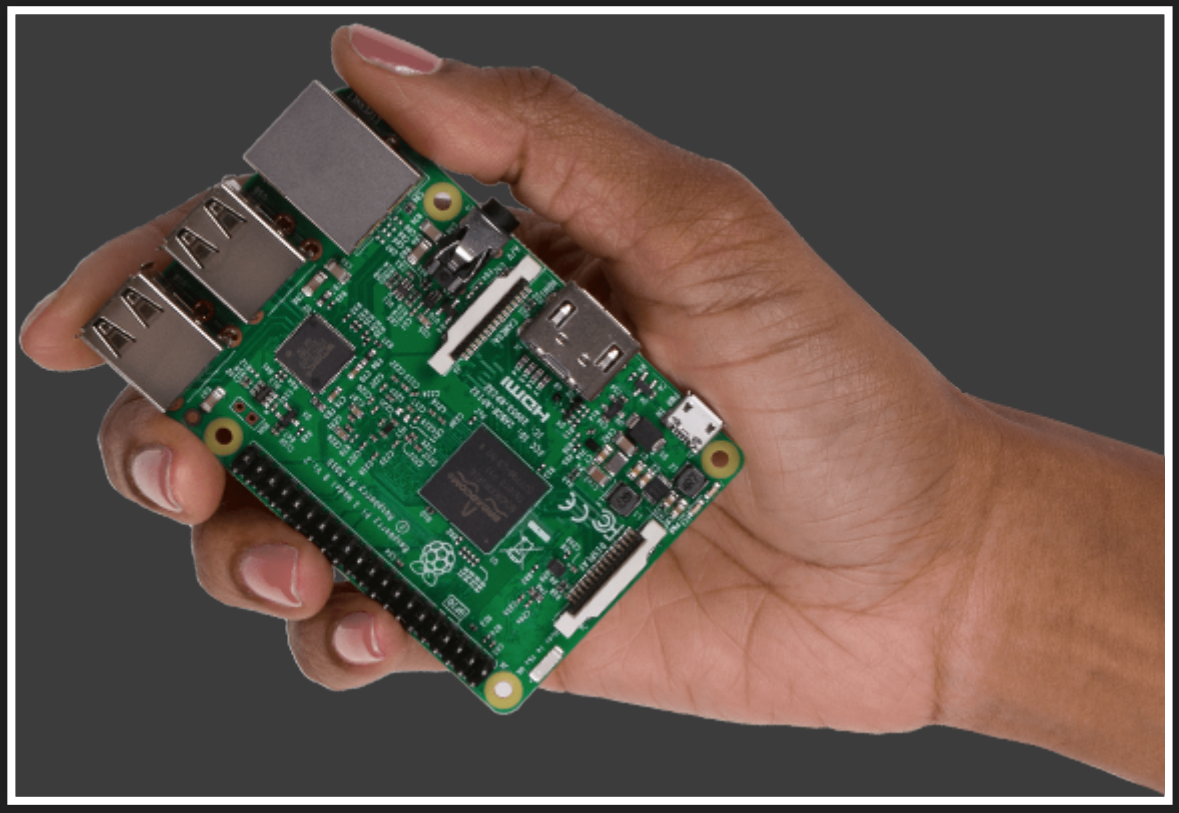
This is a great example of a super simple application that is useful and used multiple times everyday. It's not just useful to me but to my coworkers also.

SINGLE BOARD COMPUTER ACNET SENSORS

ACNET (ACcelerator NETwork) is the hardware and software infrastructure for reading from and making changes to the accelerators.

SINGLE BOARD COMPUTER

Raspberry Pi

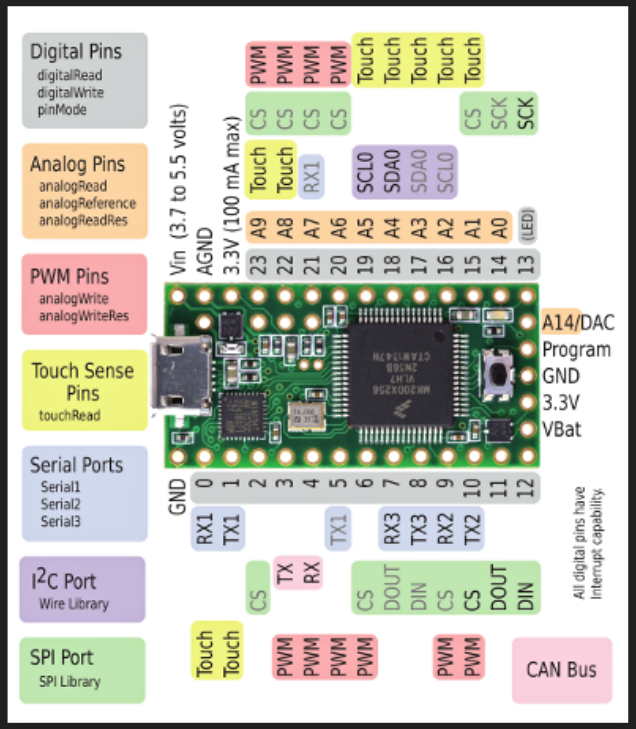


Speaker notes

This light-weight Linux computer runs a python script that sends the sensor information to ACNET.

ANALOG TO DIGITAL CONVERTER

Arduino



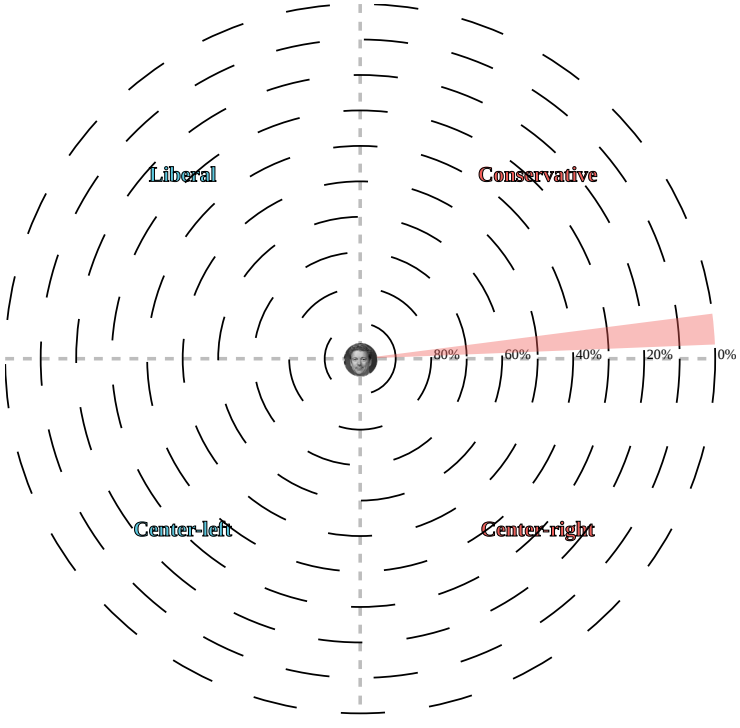
Speaker notes

We use the Teensy Arduino to mount sensors and convert the sensor output to a digital signal.

DATA VISUALIZATION

Select a Senator:

Paul (R-KY) ▼



Voting Patterns of Senators

The dark stroked circle at the center is the selected senator. The distance between the senator and other senators around him/her defines the voting similarity score. Closer to the center greater the similarity in voting pattern and vice versa. The arc position is the senator's ideology score. The ideology score is a scale from 1, being most liberal, to 0, being most conservative.

Click on any senator to view the Voting Similarity score.

Rep Dem Ind

Paul (R-KY)
Ideology score: 0.76

This visual is a modified version of Grameners Senate Similarities.

The ideology score is from GovTrack.

Speaker notes

Not work related, I modified this visualization that shows the ideology and voting similarity of US Senators.

CODING CLUB OBJECTIVE

- Share resources
- Learn new tools

Speaker notes

I want to share the tools and resources that I've learned and would like to have the group share resources with each other and use the expertise at the lab to learn new tools. I often start trying to solve a problem to have someone say, "That problem has already been solved" or "Why are you doing it that way?".

MY EVERYDAY RESOURCES

- Google
- Stack Exchange
- YouTube
- Podcasts

Speaker notes

I use other resources but I use these everyday.

GOOGLE

- Use simple language
- Quotes
  - "I need this exact phrase"
- Site search
  - site:fnal.gov cafeteria menu
- Exclude terms
  - Ford Mustang -red
- OR operator
  - puppies OR kittens OR dolphins
- Wildcard
  - how to find * on Google

Speaker notes

Word choice can change results, but Google is always getting better. There are also neat features like searching for "rice nutritional info".

STACK EXCHANGE

Self-moderating question-and-answer site

Speaker notes

There are many Stack Exchange sites to explore. Stack Overflow is the first and largest. Quora is another great one that I stumble across through Google searches but haven't submitted questions or answers.

YOUTUBE

- freeCodeCamp - Web development
- GameDevLessons - Speed coding
- Layout Land - CSS design
- The Coding Train - Machine learning
- Derek Banas - C and C++, many others
- Ben Eater - Electronics, computer architecture, and networking
- Crash Course - Many topics
- Khan Academy - Economics, math, and science
- CS Dojo - Python
- DevTips - Web design

Speaker notes

YouTube is a great resource for following along. You can go as slow or fast as you'd like and rewind and re-watch as many times as you'd like. Superior to lecture. I want to avoid lecturing. More interactive sessions.

PODCASTS

- Syntax

Speaker notes

I regularly purge my podcasts and Syntax is all I'm listening to now, but there are many great podcasts out there. If you aren't listening to podcast, do it now!

QUESTIONS?

FUTURE PRESENTATIONS

- Android App
- Bash
- Functional programming
- Regular expressions
- ACNET
- Robot

Speaker notes

I will continue to present on topics. Any suggestions for topics? Month long series versus tasty treat. Is unstructured time useful? Group project?