

## DPRG RBNV Chat Record – 2/1/2022

Carl Ott

7:43 PM

~7:43 - Iron Reign - gave progress on their competition robot. Original Concept holding steady - a pair of differential wheels up front, and a swerve wheel which is on an arm that can extend and retract...

ed mart

7:43 PM

Chris CRS meeting at Vintage radio. Museum Windsor hope to see you

Chris N

7:44 PM

Ed: I'll try!

ed mart

8:21 PM

I beam

ed mart

8:24 PM

Magnetic drive

Carl Ott

8:29 PM

~8:28 - Chris - last time shows Waypoint Navigation - natural next step was to add obstacle avoidance - in a subsumption style / approach with arbitration mechanism. Showed progress how it is (is not) coming together showed an animation...

Carl Ott

8:47 PM

~8:47 - Chris - showed how to tune parameters 'real-time' using 'dynamic reconfiguration' ...

Carl Ott

9:08 PM

~9:05 - Chris showed layout of arbitration implementation... In ROS - things are decoupled / more asynchronous - hence in his arbitrator... he publishes the command under the arbitrated name... like renaming a variable in ROS In this case - all publish some flavor of cmd\_vel, those values get latched, then the arbitration loop goes through the items that come in- and then the arbitrator republishes the selected output under a new name...

Carl Ott

9:13 PM

~9:10 - Paul explained "north-east-down" as a convention for aircraft and missiles - versus ground robots 'east-north-up'. Interesting conventions - aircrafts care about not hitting the ground, ground things want to look up...

Carl Ott

9:16 PM

~9:15 Pat - making discoveries... Raspberry PI talking to a couple Arduinos...

Carl Ott

9:21 PM

troubleshooting discussion around isolating the source of high CPU utilization. Python 3 was consuming large majority of cycles. Discussion around using 'sleep' - specific code implementation...

John Gauthier

9:24 PM

Carl, I have a 2-minute progress update if you can add me to the queue.

Carl Ott

9:25 PM

John - how about Ray next, then you, then me, then Paul...

John Gauthier

9:26 PM

Ok

Carl Ott

9:27 PM

here's a comparison between Rabbit MQ and MQTT <https://hackernoon.com/rabbitmq-amqp-mqtt-rest-of-the-world-74433c5ff8c7>

looks like Rabbit MQ can actually support MQTT <https://www.rabbitmq.com/mqtt.html>

Carl Ott

9:35 PM

~9:34 - Ray - working on a small mill (Bridgeport is showing its age, the 2x20 LCD is starting to go out). So wanted a simpler machine to do quick stuff like brackets - mill large holes, etc... showed progress...

Carl Ott

9:37 PM

for reference - 'small' in this context means like 200 pounds, versus the other one like 'a ton and a half'...

John Gauthier

9:40 PM

Does anyone see me moving in my video pane? My local view shows the video is frozen.

David Anderson

9:40 PM

John you are frozen

Carl Ott

9:40 PM

John it was paused at first - is playing now - at least I can see it jumping along

John Gauthier

9:41 PM

I think I need to reconnect.

BRB

Carl Ott

9:41 PM

Ray is broadcasting over a cellular connection - so it's a little jumpy at times

Carl Ott

9:45 PM

~9:45 - Ray showed a Thingiverse enclosure for the LCD...

Carl Ott

9:53 PM

~9:52 - John G - follow-on from last week's demo - animatronic eyes following a Raspberry Pi camera w/ CV. So then got an Intel Movidius compute stick - and now it's humming => showed a live demo -with tracking box following his head w/o jumping around...

John Gauthier

9:54 PM

<https://www.intel.com/content/www/us/en/developer/tools/neural-compute-stick/overview.html>

<https://www.pyimagesearch.com/2019/04/08/opencv-and-movius-ncs-on-the-raspberry-pi/>

Carl Ott

9:55 PM

following instructions from Pi Image Search - only had to add a couple lines of code to add to his program...

7 photons

9:56 PM

I've got to go see you all in a couple weeks

Pat Caron

10:10 PM

Great talk guys. See you next week

Carl Ott

10:13 PM

~10:10 Carl shared progress on his plans for 2022. This included a review of on-hand -options for Onboard Processors, Cameras and Computer Vision Processors and User Interface components. Also showed current thinking for this years 'reference platform' - a combination of components that can grow and scale in various dimensions & be easily adapted from one hardware base to another...

Carl Ott

10:21 PM

~10:17- Paul showed an approach to measure time between encoder ticks... Also showed damage to his battery management system after an unexpected reverse polarity incident...

Carl Ott

10:26 PM

Paul compared oscilloscope measurement of encoder jitter vs. code measured jitter...

Carl Ott

10:27 PM

measurement variation in the 8% range...

Carl Ott

10:30 PM

at top speed- gets one interrupt about every 12 ms, running on FreeRTOS - and then on a 20ms (or 50 ms) - counts number and uses time delta measured in timestamps to compute the speed... Very clever looking algorithm - see diagram circa 10:29/10:30

Carl Ott

10:33 PM

~10:32 - the queue is filled each time the ISR triggers a transition, and the queue is emptied on each 50ms transition.

Carl Ott

10:34 PM

~10:34 - code walkthrough...

Carl Ott

10:58 PM

~10:57- David A - discussed an approach to avoid theta getting clipped...