

## DPRG RBNV Chat Record – 4/12/2022

Carl Ott

7:40 PM

~7:37pm - Paul started a discussion wrt sent an email he sent to D-List regarding an open source project called OpenMower.. From Paul

Hackaday has an article on OpenMower - an open HW/SW project being done by a guy in Germany. He's taking a small off-the-shelf robomower and replacing it's electronics with his own electronics & SW. <https://hackaday.com/2022/04/07/openmower-open-source-robotic-lawn-mower-with-rtk-gps/> The main entry point is on github: <https://github.com/ClemensElflein/OpenMower> There's a video there, in which he explains the idea and shows a demo of its use.

Some noteworthy points are: - Uses RTK GPS for localization - Uses slic3r (a 3-D path planning program) to plan the mowing path. - 2-layer HW architecture like what many of us are using, with RPi running Ubuntu + ROS for the autonomy layer, and an RP2040 running the real-time control layer - Has a simulator There is quite a lot of enthusiasm for the project, and a largish community using an active discourse server for collaboration. He appears to have something actually working and is on the 2nd rev of the PCBs.

Carl Ott

7:46 PM

~7:47pm - Paul showed a demo of the software

Carl Ott

8:01 PM

Ross Melbourne videos- Donkey Car <https://www.youtube.com/watch?v=WL7yIlBNdNM> and Autonomous Rover Robot <https://www.youtube.com/watch?v=94ZJFDu6TA0&t=24s>

Also - here is Lou Amadio's presentation with respect to ROS / Robots at Scale / Microsoft Edge Robotics <https://www.youtube.com/watch?v=jmsehlCMWCE&t=5835s>

Doug Paradis

8:19 PM

Jesse's talk for OpenCV: [https://us02web.zoom.us/webinar/register/WN\\_4F40DIqBRGuFIRfwQ3-wDQ?x\\_zm\\_rtaid=PmP4HioxSS6L-UOHEB6tXg.1649812704390.16d01a9ab77a19c4eeec868738f5ae85&x\\_zm\\_rtaid=228](https://us02web.zoom.us/webinar/register/WN_4F40DIqBRGuFIRfwQ3-wDQ?x_zm_rtaid=PmP4HioxSS6L-UOHEB6tXg.1649812704390.16d01a9ab77a19c4eeec868738f5ae85&x_zm_rtaid=228)

Carl Ott

8:23 PM

~8:21pm - David Anderson showing his method to convert GPS to xy coordinates...

David Anderson

8:23 PM

<http://www.geology.smu.edu/~dpa-www/robo/challenge/math.html>

Jim F - CalgaryAB

8:26 PM

Hello @Harold & @RossM .

Carl Ott

8:26 PM

here's a link to the #OAKDLiteContest - which Jesse B presented to DPRG on 9 April. <https://opencv.org/tag/oakdlitecontest/>

Ted Meyers

8:34 PM

<https://kottke.org/18/01/us-road-grid-corrections-because-of-the-earths-curvature>

Carl Ott

8:37 PM

~8:35pm - Karim explaining that when his crowd does outdoor stuff, they never try to convert GPS to x/y.

Rather, they tend to use built-in Android facilities to compute heading and distance...

Jim F - CalgaryAB

8:37 PM

R T K ? R D K ?

Carl Ott

8:37 PM

GPS-RTK

Ray

8:38 PM

rtk real time kinematics

Carl Ott

8:38 PM

about GPS RTK [https://learn.sparkfun.com/tutorials/what-is-gps-](https://learn.sparkfun.com/tutorials/what-is-gps-rtk/all)

[rtk/all https://en.wikipedia.org/wiki/Real-time\\_kinematic\\_positioning](https://en.wikipedia.org/wiki/Real-time_kinematic_positioning)

Carl Ott

8:42 PM

~8:40pm - Karim update - Iron Reign competed in states this last weekend - won the Design Award - even got the expandable wheel mechanism to behave well - where it can hop over barriers probably better than any of the others out there on the field...

Jim F - CalgaryAB

8:42 PM

@Carl Thank You.

Carl Ott

8:43 PM

Karim - could be perhaps the most complex robot in First. And did well to advance to state (although not to worlds).

Ross Murphy

8:43 PM

@jim Hey there bud

Jim F - CalgaryAB

8:44 PM

Hello @RossM

Carl Ott

8:46 PM

~8:45pm - Harold showed progress on his ExoMy, running on ROS2, lots of nodes working together. Also has a Giveaway going on for his Twitch channel: <https://contests.davidriewe.com/harold-pulcher-give-away-4-22/>

Pat Caron

8:59 PM

Thanks guys, I have an early morning tomorrow.

Jim F - CalgaryAB

9:09 PM

<https://youtu.be/i6uBwudwA5o> Ackermann Steering

Carl Ott

9:12 PM

~9:00pm - interesting discussion of steering geometries - various steering model concepts for a 6 wheel rover layout - mapping Ackerman steering concepts to alternate wheel layouts...

Carl Ott

9:14 PM

~9:14pm - David A- finding bearing and distance from lat1, lon 1 to lat2, lon2

that math was behind this link <http://www.geology.smu.edu/~dpa-www/robo/challenge/math.html>

Carl Ott

9:16 PM

Karim recommended great tool for graphing calculator: <https://www.desmos.com/calculator>

good for vector calculator

Ponder SomeMore

9:18 PM

<https://ironreignrobotics.org/2022-02-26-control/>

Carl Ott

9:19 PM

Thanks Karim - good video to show how Iron Reign used Desmos to simulate and visualize their vector calculations

Carl Ott

9:23 PM

~9:17 - DPRG devolved from a discussion on the beauty and resilience of FORTRAN - "the Language of Science" - to coding Z80 assembly code. - and progressing to a Commodore C16

Ponder SomeMore

9:23 PM

just after the desmos section they show an animated example of the turning calculations

Carl Ott

9:26 PM

~9:25pm -Dave Ackley talked about his idea of creating **Sprites** in hardware to move objects around on the screen...

Carl Ott

9:27 PM

with the idea that you'd specify an x/y location and the hardware would overlay the 8x8 or 16x16 pixel image at that location...

Ponder SomeMore

9:27 PM

**David Ackley coined the term Sprite in the computer animation space and it's a standard term now**

Carl Ott

9:28 PM

Exactly! And discussed a hardware implementation of "alpha channel" where one color was "transparent" so that you could see the background image through spokes...

Carl Ott

9:29 PM

and the image overlay, including transparency - was all done in hardware...

Chris N

9:31 PM

Need to punch out for today.... Good nigh!

Carl Ott

9:41 PM

the Cosmac ELF [https://en.wikipedia.org/wiki/COSMAC\\_ELF](https://en.wikipedia.org/wiki/COSMAC_ELF)

circa 1976 / 1977

Carl Ott

9:43 PM

analog computers - programmed by patch panel.. [https://en.wikipedia.org/wiki/Analog\\_computer](https://en.wikipedia.org/wiki/Analog_computer)

Paul Bouchier

9:47 PM

Got to go