# Brent Roman Sorted By Project

## 708184 - ESP Monitoring PNW

- Helping to diagnose likely USB cabling problems (Week 10)
- Helped diagnose camera troubles (Week 15)
- Ended up shipping a replacement camera (Week 15)
- Steph's lab deploys for La Push, WA on  (Week 18)
- ESPeddie deployed off La Push (Week 20)
- ESPfriday deployed in a remote lab (fed samples from field by technician) (Week 20)
- ESPeddie deployed off La Push, WA via Certus satcoms running well (Week 22)
- ESPfriday deployed in remote lab (Week 22)
- La Push WA deployment continues (Week 24)
- The ESP deployed off La Push, WA is running into mechanical problems (Week 25)
- It is also burning through battery faster than anticipated (Week 25)
- I've been able to keep it going for now over Iridium Certus (Week 25)
- Exhaust port of ESPeddie, deployed off La Push, WA,  sticking closed (Week 27)
- Uncovered bug in Ruby exception masking  (Week 27)
    - Pushed fix and now the Exhaust unstick exception recovery working (Week 27)
- But, we will still run out of battery a few weeks before planned recovery (Week 27)

## 901205 - ESP SURF Center

- Debugging cell modem connection script for the troublesome SIM7672G (Week 2)
- Writing and testing generalized GPS enable/disable scripts for GPS equipped modems (Week 2)
- Working with Andrea on determining why ESP WiFi cannot connect to the Parkard's network. (Week 2)
- Working with FIDO team to create a separate /boot filesystem (Week 3)
- So that the rootfs can be recovered on next boot after FIDO loses power (Week 3)
- Lots of testing of improved WiFi and cell modem management in ESP Linux (Week 3)
- Supporting NWFSC NOAA's repairs of their ESP's grippers (Week 3)
- Discovered that RTL8723DU WiFi chips work on the Parkard (Week 3)
    - When RTL8723BU WiFi chips do not associate with its Cicso APs at all (Week 3)
- Ported driver for the 8723DU to ESP Linux kernel (Week 3)
    - Testing for long term stability (Week 3)
- Supporting Preston, Nadia & Scott in prepper ESPkoa for Brazil  (Week 5)

- Prepared ESPaway router with USB cell modem that should work in Brazil (Week 10)
- Helped Jim Brich debug his puckreader/scanner app (Week 15)
- Worked with Kevin Gomes to package it into the FIDO SDcard image (Week 15)
- Colleagues in Denmark have deployed ESP on a creek in Iceland (Week 18)
    - Doing in-situ PCR every other day for a few months (Week 18)
- Patched the MBARI Ruby interpreter to (hopefully) fix a very rare garbage collection bug. (Week 18)
    - Found 20 year old post on the Ruby issue tracker that looked like a good match (Week 18)
    - In case this bug bites again, modified Ruby to soldier on rather than bailing. (Week 18)
- Moved NFS mounts to thalassa (Week 20)
- Patched old bug in Ruby garbage collector (Week 20)
- Helped Chris Preston diagnose weirdness with 3G cartridge heat calibration (Week 22)
- Working with Preston and Nadia to restructure configuration files to make it easier for 3G ESPs to move between different types of domes. (Week 25)
- Helping Nadia bring up ESP3s retrofitted for Function cartridges (Week 27)
- Updating every ESP2G in the field (ongoing, never ending ;-) (Week 27)
- Improved the calibration procedure for the 3G ESP's Carousel absolute position sensor (Week 29)
- Hacked some custom firmware to correct ESPhonu's damaged abs pos sensor (Week 29)
- Updated a few 2G ESPs at WHOI (Week 30)
- Implemented a firmware enhancement for 3G ESP that corrects for non-linear carousel position sensors (Week 30)
    - Required for upcoming GLERL ASV deployment (Week 30)
    - Built and tested in 2 days. (Week 30)
    - Still needs lots more work to make it generic (Week 30)
        - Initial Implementation requires custom firmware for each effected ESP (Week 30)

## 902101 - LRAUV Technology Development

- Configured, tested and reviewed RUT-271 Teltonkia cellular router (Week 5)

## 902204 - Scalable Robotics

- Met with Sebastian Rodriguez to learn project goals/challenges (Week 5)
- Built camera driver on my workstation (Week 5)
- Got the same error messages they get ☹ (Week 5)
- Completed port of the driver/daemon from DepthAIv2 to DepthAIv3 (Week 10)
- Finished conversion to DepthAIv3 (Week 15)
- Identified that framerate was being limited by network bandwidth (Week 15)

- Revised sen_oakd_lcm_cpp driver to compress images with MJPEG (Week 15)
    - Resulting in 3x increase in framerate (from 12 fps to 30 fps) (Week 15)
- Fixed a few long standing bugs in sen_oakd_lcm_cpp (Week 15)
- Worked with George Stern to determine that camera CPU was overloaded (Week 18)
    - By 3 sensors running >12fps (Week 18)
- Added a driver feature decimate frames from a stream (Week 18)
    - Sebastian added important logic to it to keep stereo cameras synchronized. (Week 18)
- Recommended testing new generation cameras that offer faster processor and network (Week 18)
- Working with series 4 devkit (Week 20)
    - Nothing works as described :-( (Week 20)
- Worked with Javiera to determine that Mola is attempting to write video to its RP4's built-in SDcard at >50MBytes/s – suggested architectural changes to make this work. (Week 22)
- Experimenting with SD-cards and Flash drives to store uncompressed video (Week 24)
- Finally found a thumbdrive that could write raw video fast enough (Week 25)
    - But only for 30min at a time. Then, it must be reformatted to avoid "flash folding" (Week 25)
- George and I ordered a Radxa 5C to replace the Pi4 (Week 25)
    - It supports NVME SSDs (Week 25)
    - Found one 2230 SSD that appears to sustain >500MB/s during long writes (Week 25)
    - We shall see 🙂 (Week 25)
- Hacked the camera driver to allow it to pass through JPEG encoded frames from camera (Week 27)
- Increased max frame rate from 6fps to 18fps. Yippee! (Week 27)
- Ripped out Stereo Matcher (Week 27)
    - Need to work with Sebastian on optimizing it. (Week 27)
- Developed USB passthru mode to increase framerate (Week 29)
- Working with George Stern to investigate the possibility of running USB between Mola cans to increase available bandwidth for camera. (Week 29)
- Helped George Stern verify feasibility of running USB from the OAKd camera directly into the main Mola can. (Week 30)

## 902304 - Piscivore Cam

- Readied G3 camera for another deployment (Week 3)
- Altered focus to near infinity (Week 3)
- Started testing new lower-power Ambarella CV28 SOC (Week 5)
- Boots, but does not "see" attached camera (Week 5)
- Working with George Stern to chase down likely hardware problem (Week 5)

- Worked with George Stern to bring up CV28 SOM and IMX 662 camera module (Week 10)
- Brought up camera app on CV28 lower-power camera (Week 15)
- Pitched investigating RockChip's RV1126B (Week 15)
- Ordered 2 RV1126B camera boards (Week 15)
- Working with Rockchip's tools to convert YOLO models (Week 15)
- Testing lots of alternative lenses in the hopes of finding one with greater depth of focus. (Week 18)
- Finally received RockChip RV1126B dev board (Week 20)
    - Took only a couple hours to get the camera working! (Week 20)
- Trying to figure out how to get an IMX415 camera sensor to output HD video at 60fps. (Week 22)
    - There are some versions of the Linux driver that purport to do this, but no joy so far in getting them working on my RV1126B dev board. Not giving up yet. (Week 22)
- Improved imx415 driver to enable 4k video @25hz and HD@60hz (Week 24)
- Continue working to enable digital fish-eye lens dewarping (Week 24)
- Still struggling to enable lens dewarping hardware (Week 25)
    - Most of the best docs are from Rockchip in Chinese (Week 25)
    - AI is helpful, but often incorrect. (Week 25)
- Finally figured out how to enable fisheye lens dewarping on RockChip camera (Week 27)
- Deployed again (Week 29)
- Working with AI toolkit on Lonny's models (Week 29)

## DQ2435 - GLERL AK

- Working with GLERL to ready their ASV for ESP (Week 24)
- Shipped dummy ESP for comms integration testing onto their ASV (Week 27)

## DQ2517 - ONR Middleware

- Discovered that prospective valve control lacked an absolute position sensor (Week 29)

## Out of Office

- Sept 8 - Oct 16 (vacation)

## Overhead