For clearer view, visit: https://nusu-my.sharepoint.com/personal/e0325858_u_nus_edu/_layouts/OneNote.aspx?id=%2Fpersonal%2Fe0325858_u_nus_edu%2FDocuments%2FChenghui%20%40%20National%20University%20of%20Singapore&wd=target%28ESP3902.one%7CAB08BA32-539B-4EA6-AFAB-73257FE0B650%2F2.1%7CEA296E75-B623-40B3-A6DD-8ACA4193F4E6%2F%29onenote:https://nusu-my.sharepoint.com/personal/e0325858_u_nus_edu/Documents/Chenghui%20@%20National%20University%20of%20Singapore/ESP3902.one#2.1&section-id={AB08BA32-539B-4EA6-AFAB-73257FE0B650}&page-id={EA296E75-B623-40B3-A6DD-8ACA4193F4E6}&end

Under Logbook -> 2.1 and 2.2

2.1

Tuesday, 18 August 2020 3:42 PM

Feedbacks:

Sign language: maybe transfer learning? Go for it if only got pretrained model. Can be done by any camera, not using the camera to the full extent.

Car no need built. Can just buy if can buy.

Which project best bring out the 3D property? The 3D is the novel part.

Moving hand into and out of camera counts as 3D imaging.

If can code out the recognition part, that can be part of the novelty. Prefer that to commercial software.

Stereolithography? - Too hard to do

What if we just choose 1 of the ideas we already have?

- ~~Control veh~~
- ~~Touchless interface~~
- ~~Sign lang~~
- physio

looks most interesting

Looking into physio:

- BOM would stay relatively the same. → Might be too hard?
- Either get Niutrack SDK ~~or make ourselves~~
- https://personal.utdallas.edu/~kehtar/UTD-MHAD.html → Might be too unrealistic within this project.
  for the movement data
  got RGB, depth, skeleton.
  [But all in matlab]
- If got time, maybe can make it interactive by helping you correct your posture?

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5773117/

2.2

Thursday, 20 August 2020 2:16 PM

Possible data set:
- https://arxiv.org/pdf/1905.04757.pdf
- http://www.michaelfirman.co.uk/RGBDdatasets/
  ~ whole bunch of datasets
  ~ https://tele-immersion.citris-uc.org/berkeley_mhad

Exercises to consider:
1. Rotary cuff (L, R)
2. Squats
3. Jumping Jacks

Trained model? → https://github.com/DhruvJawalkar/yoga-pose-estimation

Possible complications
- Accuracy of open source datasets. Physio would need ppl to follow more strictly than everyday movements
- Different ppl the joints move differently

HOW ABOUT:
- normal exercises (gym-related)
- YOGA
  ~ cause static so can just sample that 1 frame.

~ cause static so can just sample that 1 frame.

[Too simple in the sense that 1 ppl can do it.]

Need make it more complex to have a diversification of roles among us.

Me: software side -> camera + SDKs
WP: hardware + software (so maybe on the integration & communication between)
Nab: hardware side -> Making the sensors work, learn what kinda ouput, making wearables for the sensors to be housed in.

Add sensors to aid in the detection? Add on to see if exercise done correctly
- ~~Strain-gauge~~
- Gyroscope + accelerometer (all 3 axis) → Making it a wearable

the RealSense SDK is integrated in our SDK to receive the images from realsense

Nuitrack SDK for skeleton tracking/or cubemos??? (intel version)
- Both have trail so i need try both out before buying

D435 camera ↔ RealSense SDK

Sensors
- Gyro + acc
- Strain-guage