Senior Design Weekly Meeting #10

Meeting Minutes

11/13/2020 14:30 - 16:20

CM/TM: Dr. Honggang Zhang
Students: Zhuoming Huang, Lucas Lomba, Yue Sun, Alinson Sanquintin

- **Agenda**
  1. SAR Experiments Related
  2. Deep Learning Related

- **Notes**
  1. SAR Experiment related
     a. 1.5MB data required by 12 virtual antennas, for 1 frame (128 chirps, 256 samples each chirp) at 10Msps sample rate, 29.982 MHz/us sweep slope.
     b. 20cm (19.54cm) range resolution for configuration above. To have a 4cm range resolution, we need either 1/5 of the sample rate (2Msps) or 5 times of the number of samples (256*5=1280)
     c. Horizontally, we can have 10 unique positions with a 200mm slider. Will collect data with 3 horizontal positions for the next dataset.
     d. Horizontally, using only one antenna, collect data from 80 positions (2.5mm apart), then move the slider 100mm (add some error, 0.5-1mm) in horizontal direction to collect data from another 80 positions (40 positions overlapping), test the difference in results.
     e. Get ground truth with ZED mini
     f. Check out the Hawkeye synthesizer, and check how to get the CAD models (to save time from manually collecting data)
  2. Deep Learning Related
     a. Lucas is trying to run some scripts on the Gibbs Cluster server. Some packages are missing. Yue shared the tutorial to install the Conda (the package manager) locally (no administrator access needed) for installing other packages (dominate). https://drive.google.com/drive/u/1/folders/1T4peQrbjUI6dUseJSFN4DpIFXGiEDs3c
     b. Yue will check how to train 3D models with CycleGAN.

- Follow-up

1. The intensity images were generated with averaged sample data and range-fft before 2d angle-fft. They somehow represent the scenario, but with a wrong range resolution (20cm instead of 4cm).