RADAR AND SONAR PROCESSING

(Witty remark)

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Results

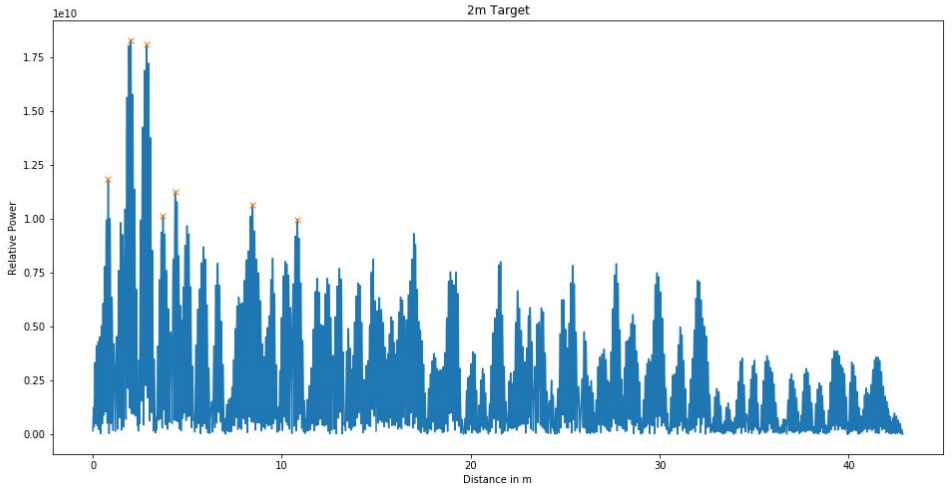
	Distance	Return Strength
0	0.807472	1.18169e+10
1	2.0099	1.82807e+10
2	2.84371	1.80694e+10
3	3.71262	1.01325e+10
4	4.35333	1.12515e+10
5	8.45212	1.06477e+10
6	10.8131	9.96702e+09

Total Targets: 7

```
In [48]: # Distance Plot

         plt.figure(figsize=(16,8))
         plt.plot(x,xcorr_array[0:nsamps])
         plt.plot(peaks*dx,xcorr_array[peaks], 'x')
         plt.title('2m Target')
         plt.xlabel('Distance in m')
         plt.ylabel('Relative Power')

Out[48]: Text(0, 0.5, 'Relative Power')
```



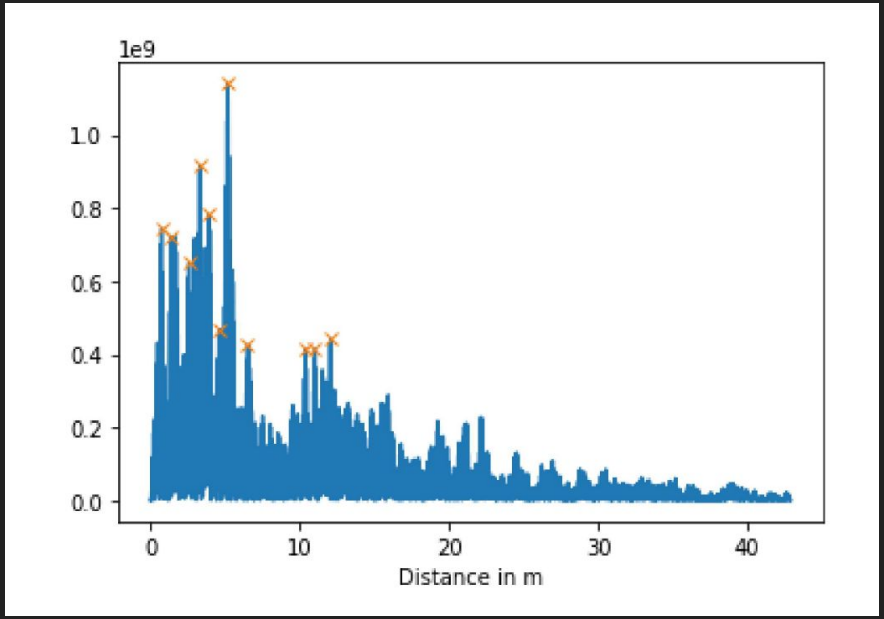
Conclusions

Maximum range detected: ~10m (30 ft.)

Resolution: ~0.5m

FM Chirps from 3-5kHz

Cross Correlated and Filtered (2.5-5.5kHz)



Tips for the Future:

-Dont try to install Librosa on a rPi

-Write better Pseudocode and do more planning

-Our rPi does not like dynamic arrays with several million data points.

-Also we are sad for the whales :(