Inicialização do objeto RadarSImulator

```
radobj = RadarSimulator;
```

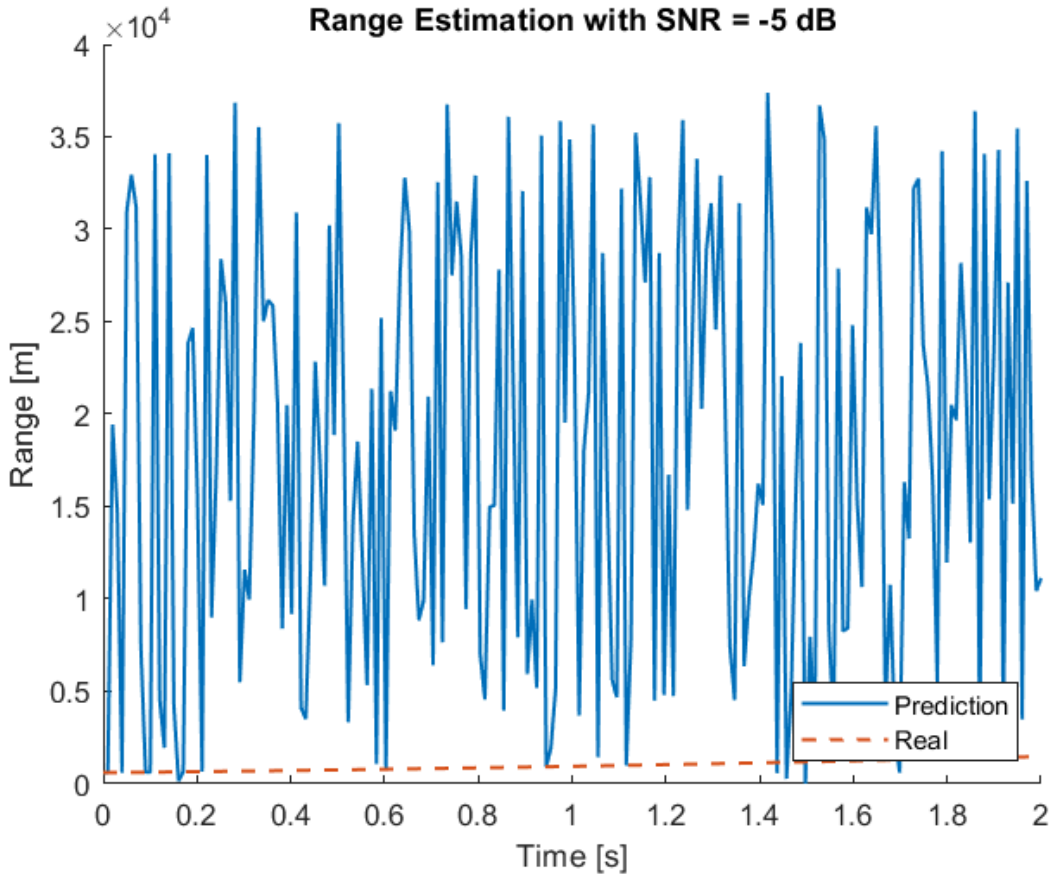
```
ans =
  RadarSimulator with properties:

              antenna_rpm: 12
            beam_aperture: 3
                        c: 300000000
                   dcycle: 0.0040
                     dSNR: 20
                     dvdt: 0
                       fp: 100000000
                       Gt: 1
                       Gr: 1
                        L: 6
                    Nofig: 0
                       Pt: 100000
                        R: 600
                    Sigma: 1
               SimDuration: 2
                       Tp: 1.0000e-06
                      V_0: 100
              acceleration: 30
    npulses_per_prediction: 100
                rangegates: [1×1250 double]
                 range_res: 30
                        fs: 5000000
                        gd: 4
                     hant: [1×1 phased.IsotropicAntennaElement]
                     hcol: [1×1 phased.Collector]
                      hmf: [1×1 phased.MatchedFilter]
                     hrad: [1×1 phased.Radiator]
                     hrec: [1×1 phased.ReceiverPreamp]
                   hspace: [1×1 phased.FreeSpace]
                     htgt: [1×1 phased.RadarTarget]
                  htgtplat: [1×1 phased.Platform]
                       htx: [1×1 phased.Transmitter]
                   htxplat: [1×1 phased.Platform]
                     hwav: [1×1 phased.RectangularWaveform]
                     lamb: 3
                max_range: 37500
                max_speed: 3000
                       No: 8.7904e-12
                   Notemp: 6.3668e+05
                   npulse: []
            n_predictions: []
                      PRF: 4000
                      PRI: 2.5000e-04
                    rxsig: [1250×100×0 double]
                   sigrad: []
                    sigtx: [1250×1 double]
                   sigwav: [1250×1 double]
                speed_res: 60
                   tgtpos: [3×1 double]
                   tgtvel: [3×1 double]
                   tgtang: [2×1 double]
                    txpos: [3×1 double]
```

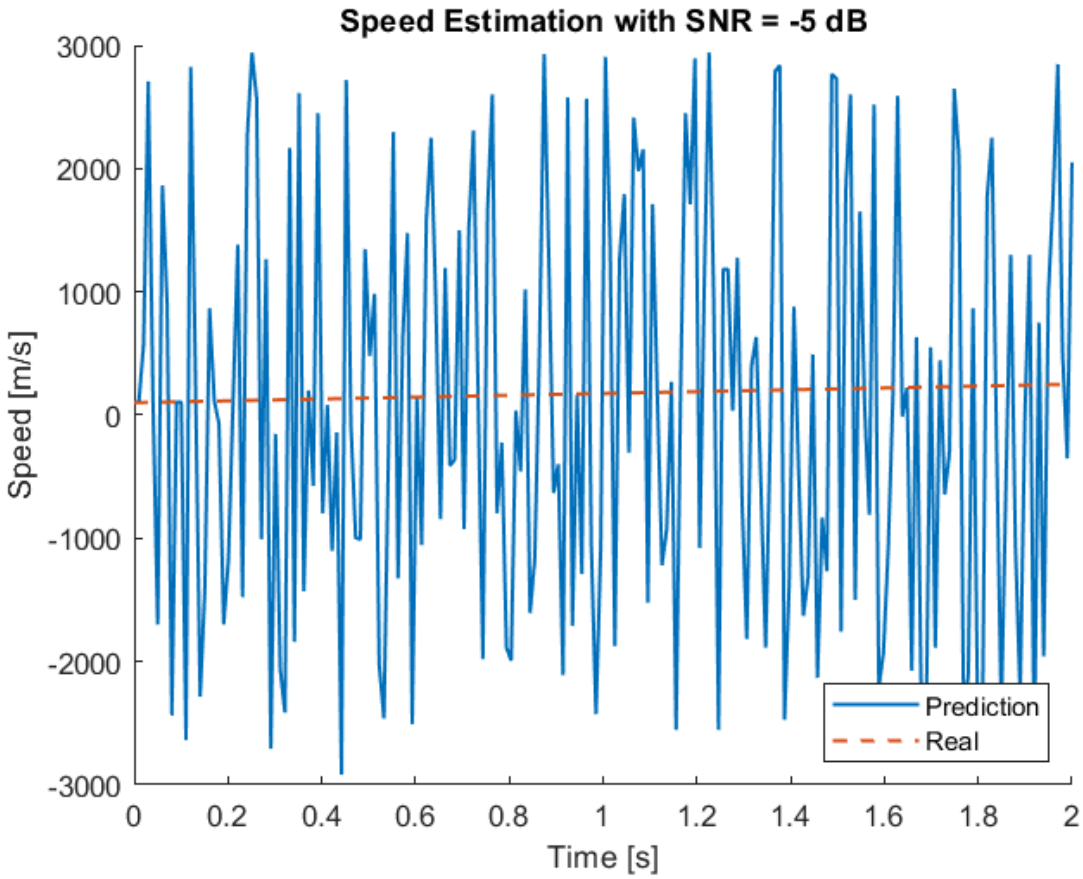
```
    txstatus: [1250×1 logical]
       txvel: [3×1 double]
```

```
sim_duration = 5; % time in seconds to simulate.
```

SNR = -5 dB.

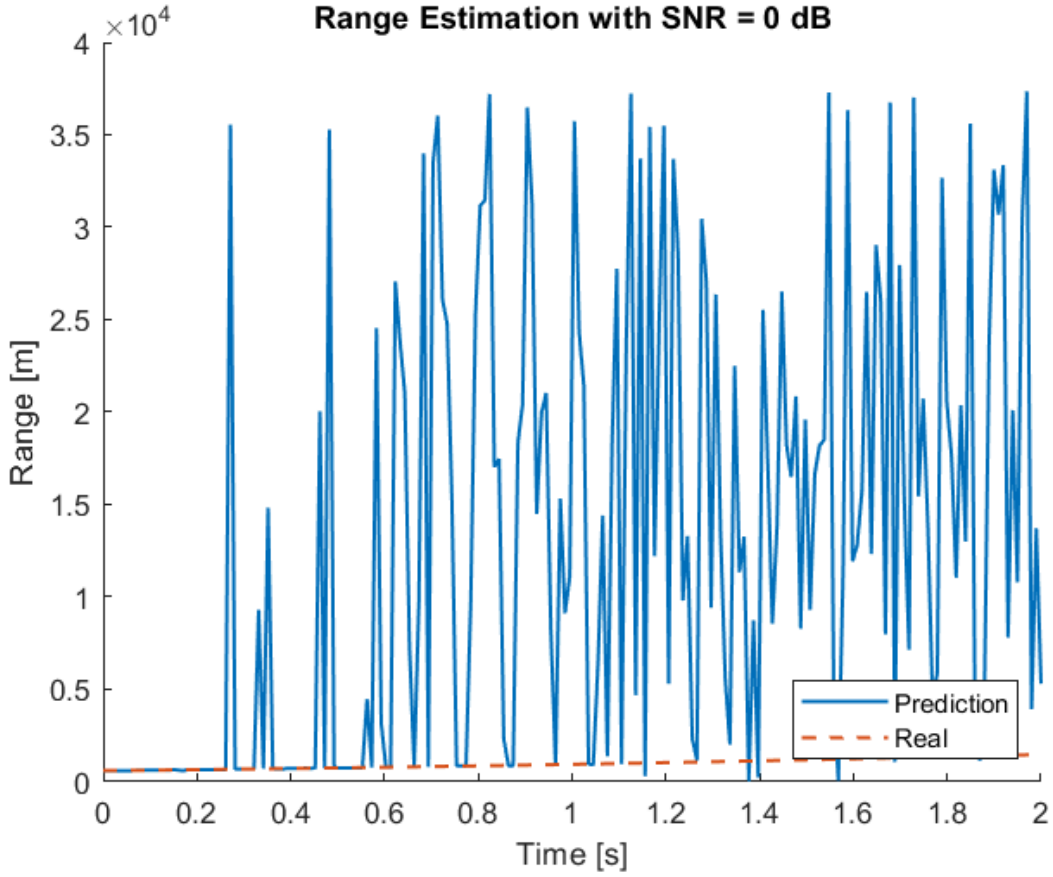
```
radobj.dSNR = -5; % dB
radobj = update_parameters(radobj);
result_struct_0 = runSim(radobj, sim_duration);
RadarSimulator.plot_range_speed_pred(result_struct_0, radobj)
```

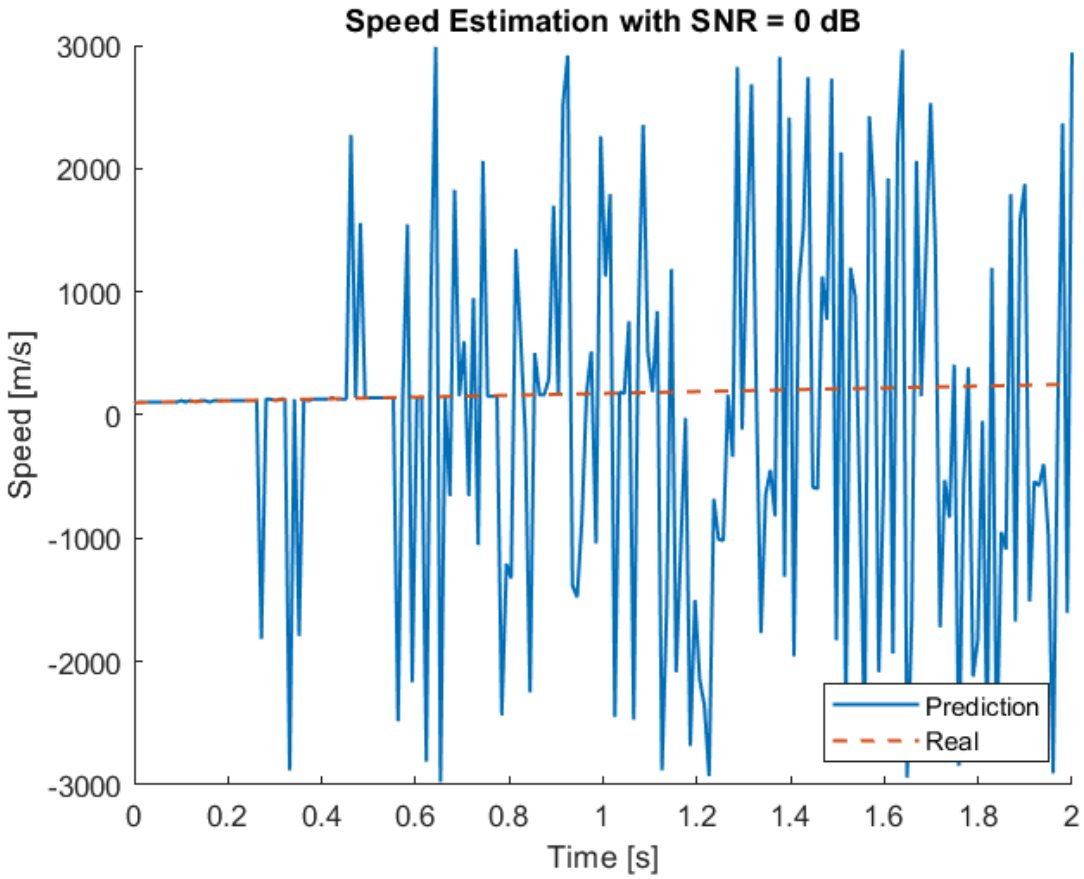




SNR = 0 dB.

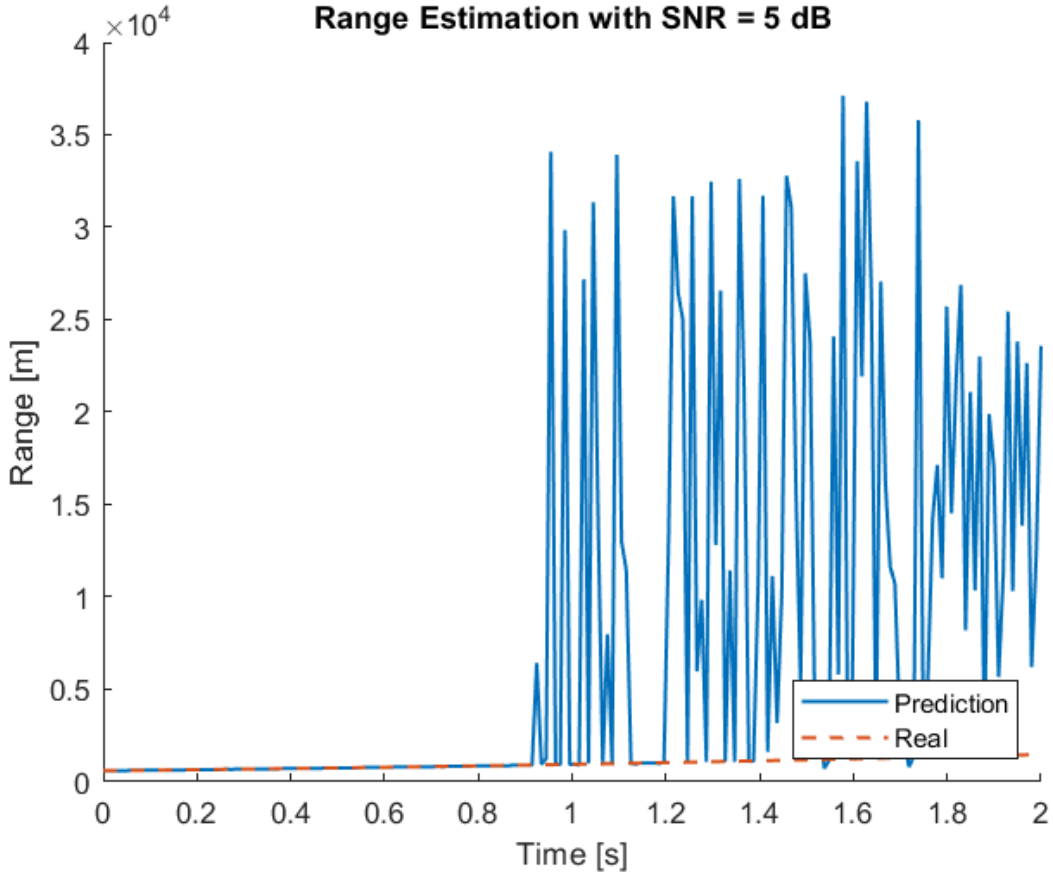
```
radobj.dSNR = 0; % dB
radobj = update_parameters(radobj);
result_struct_1 = runSim(radobj, sim_duration);
RadarSimulator.plot_range_speed_pred(result_struct_1, radobj)
```

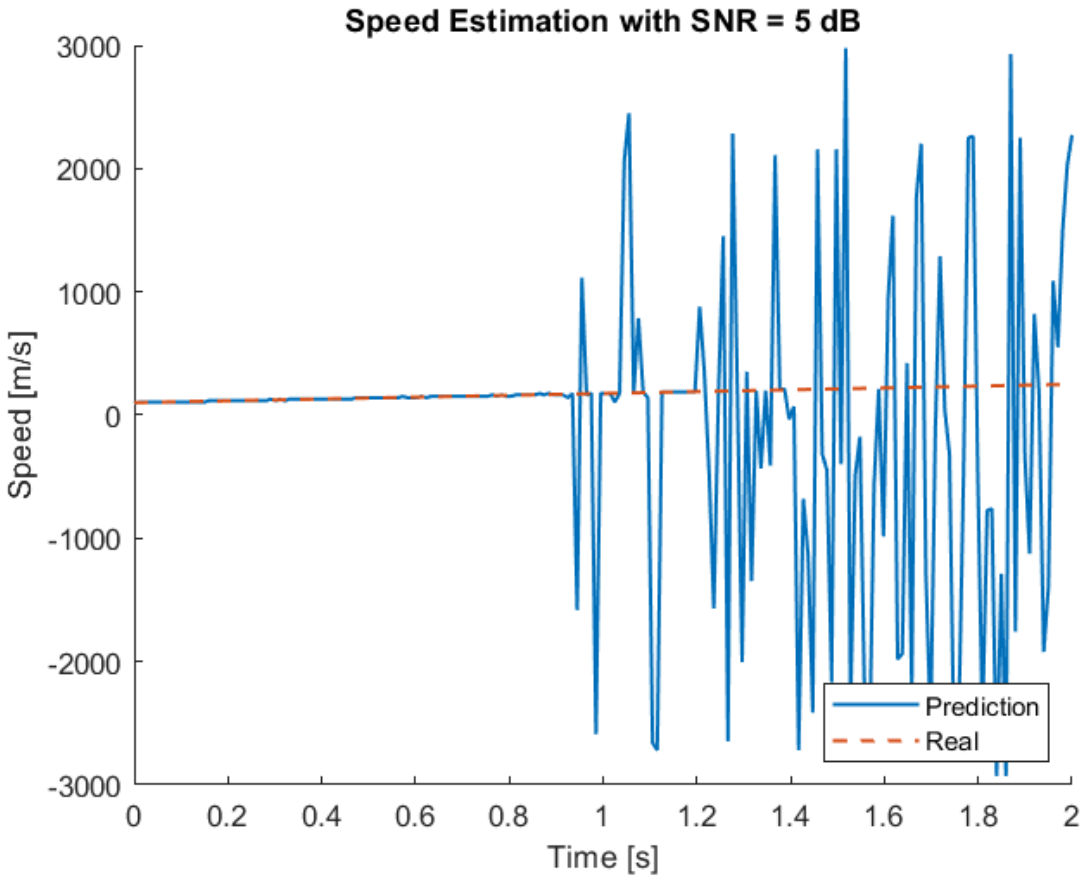

Range Estimation with SNR = 0 dB
×10^4
4
3.5
3
2.5
2
1.5
1
0.5
0
Range [m]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time [s]
Prediction
Real



SNR = 5 dB.

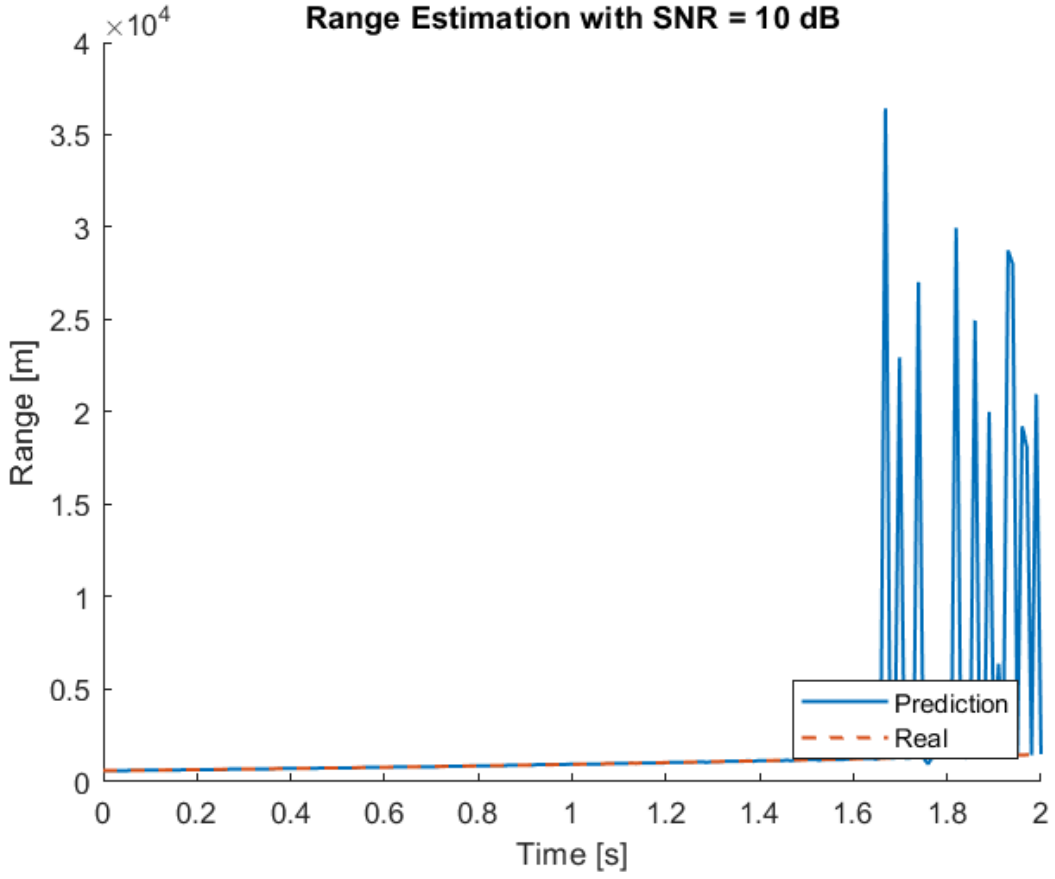
```
radobj.dSNR = 5; % dB
radobj = update_parameters(radobj);
result_struct_2 = runSim(radobj, sim_duration);
RadarSimulator.plot_range_speed_pred(result_struct_2, radobj)
```

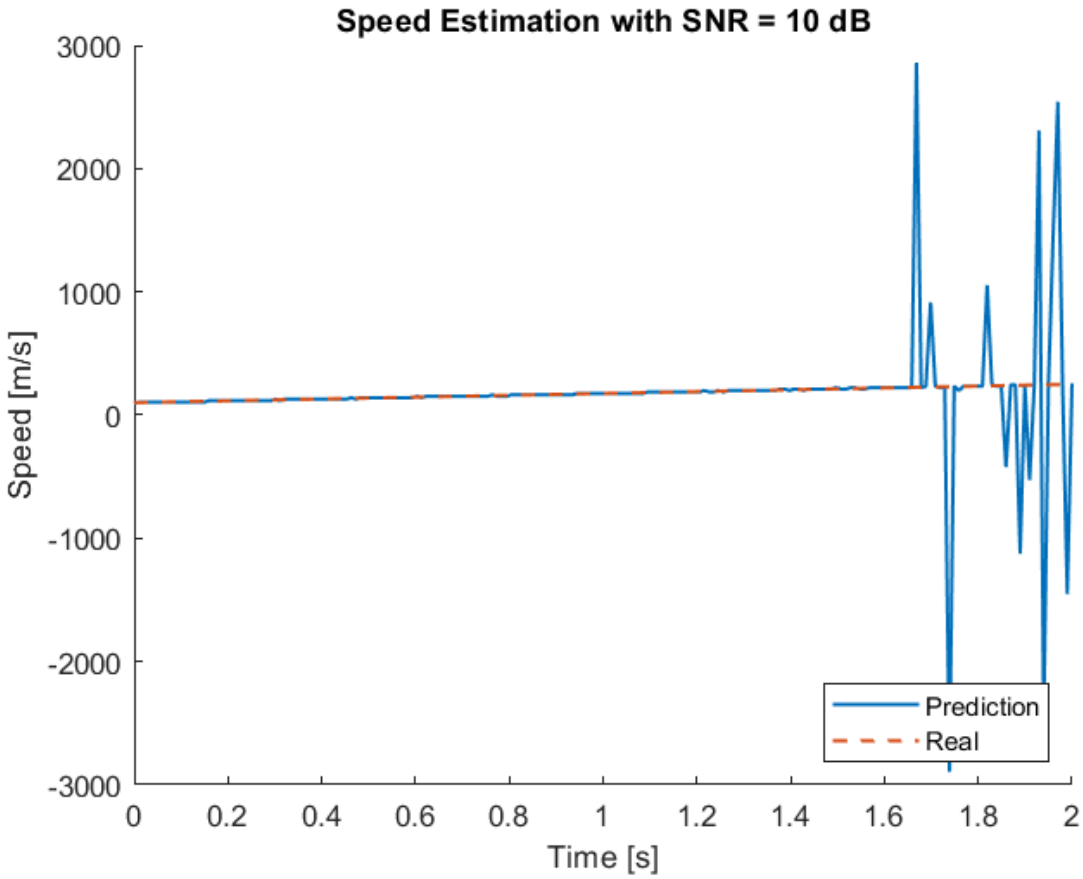

Range Estimation with SNR = 5 dB
×10^4
4
3.5
3
2.5
2
1.5
1
0.5
0
Range [m]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time [s]
Prediction
Real



SNR = 10 dB.

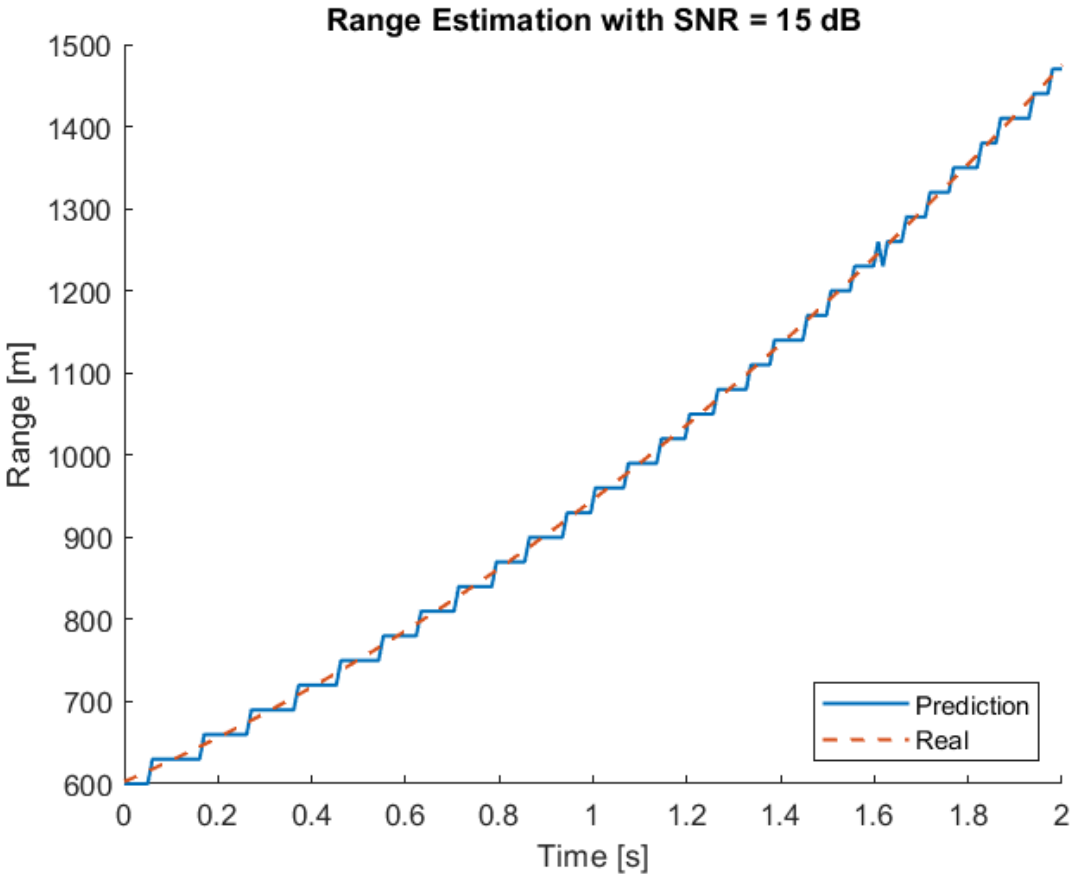
```
radobj.dSNR = 10; % dB
radobj = update_parameters(radobj);
result_struct_3 = runSim(radobj, sim_duration);
RadarSimulator.plot_range_speed_pred(result_struct_3, radobj)
```

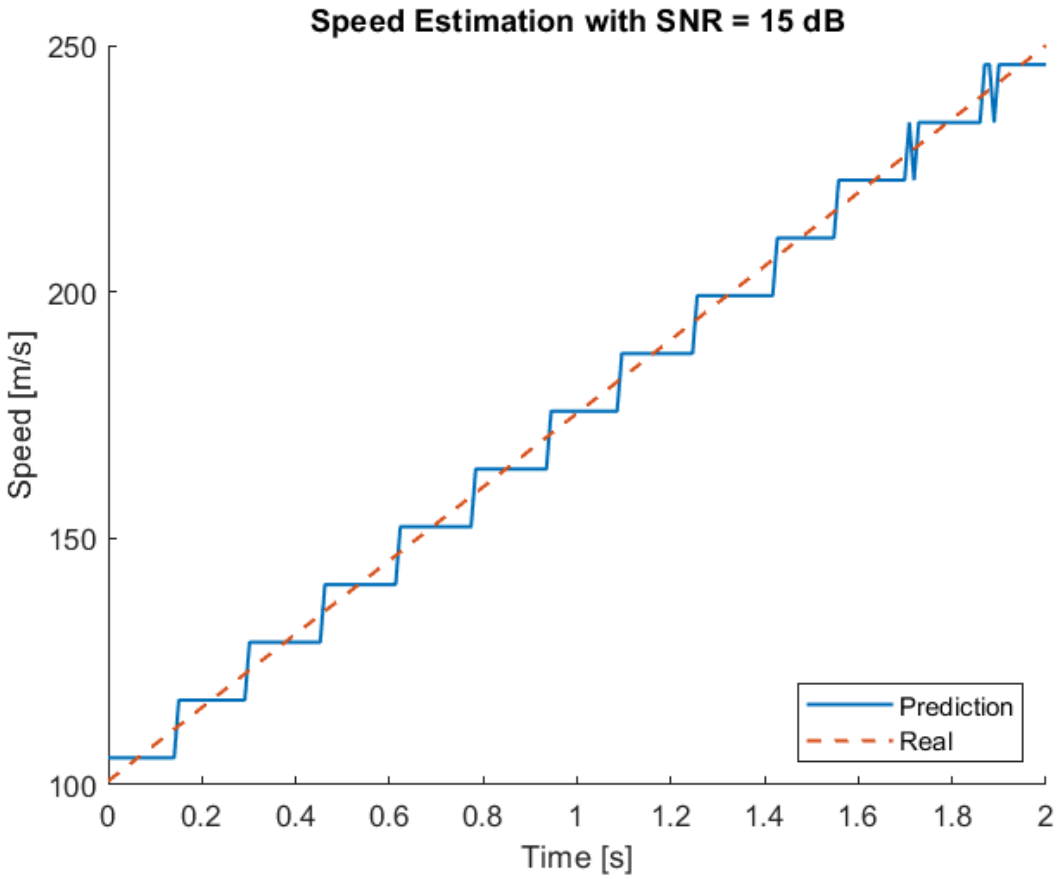

Range Estimation with SNR = 10 dB
×10^4
4
3.5
3
2.5
2
1.5
1
0.5
0
Range [m]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time [s]
Prediction
Real



SNR = 15 dB.

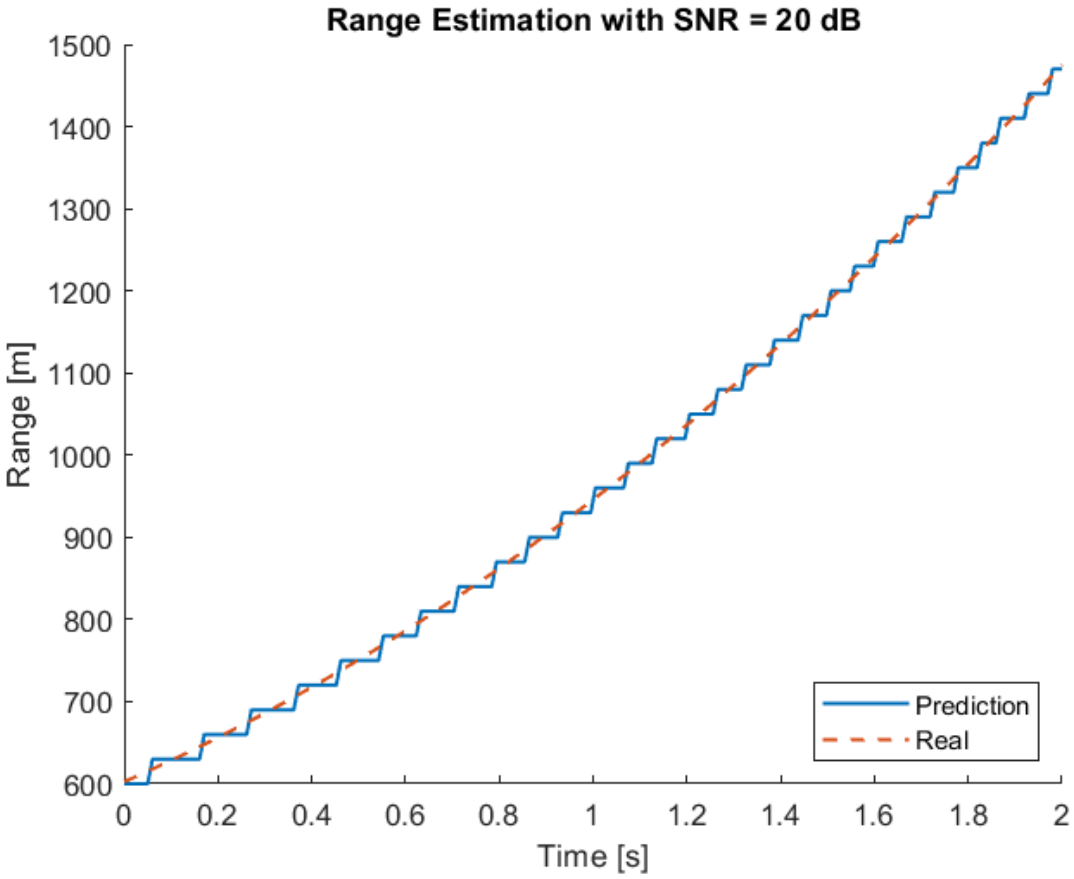
```
radobj.dSNR = 15; % dB
radobj = update_parameters(radobj);
result_struct_4 = runSim(radobj, sim_duration);
RadarSimulator.plot_range_speed_pred(result_struct_4, radobj)
```

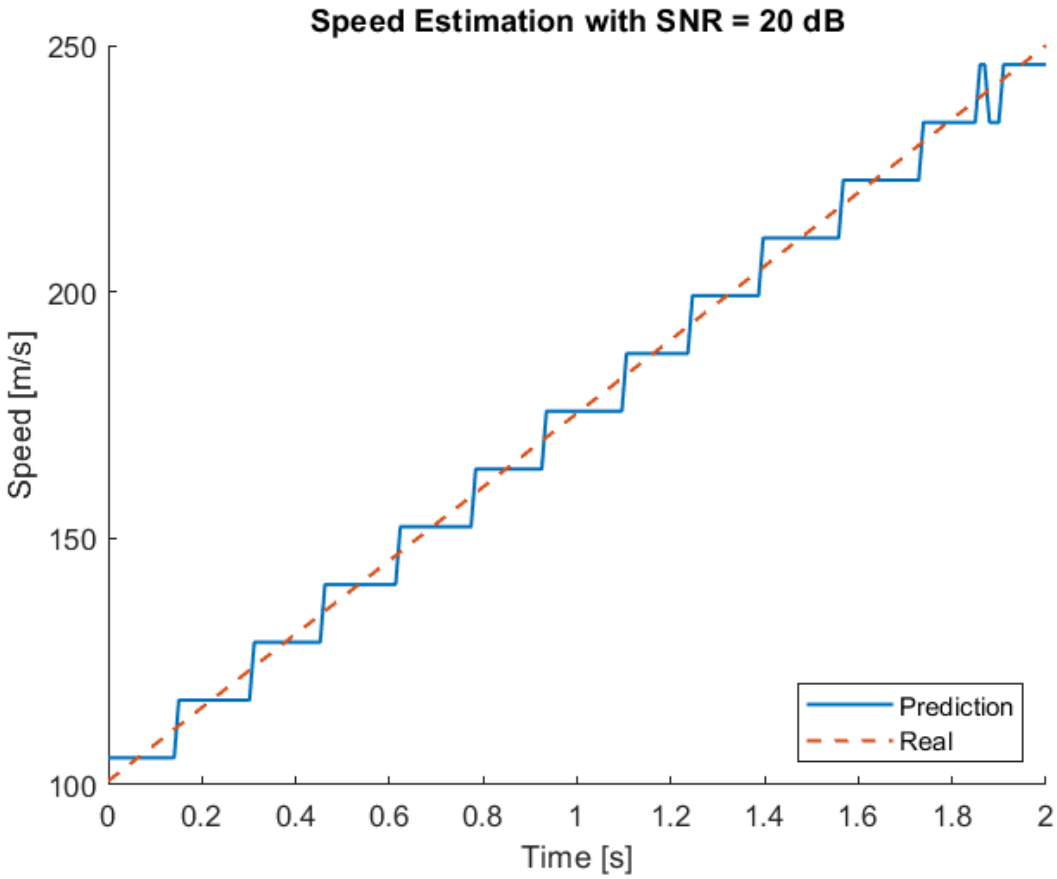

Range Estimation with SNR = 15 dB
Range [m]
Time [s]
Prediction
Real
1500
1400
1300
1200
1100
1000
900
800
700
600
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2



SNR = 20 dB.

```
radobj.dSNR = 20; % dB
radobj = update_parameters(radobj);
result_struct_5 = runSim(radobj, sim_duration);
RadarSimulator.plot_range_speed_pred(result_struct_5, radobj)
```


Range Estimation with SNR = 20 dB
Range [m]
Time [s]
Prediction
Real
1500
1400
1300
1200
1100
1000
900
800
700
600
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2


Speed Estimation with SNR = 20 dB
250
200
150
100
Speed [m/s]
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Time [s]
Prediction
Real