Bluetooth Tracking Report

feb9/2-9-test3-uwb.csv

February 19, 2025

1 1D b1d_distance
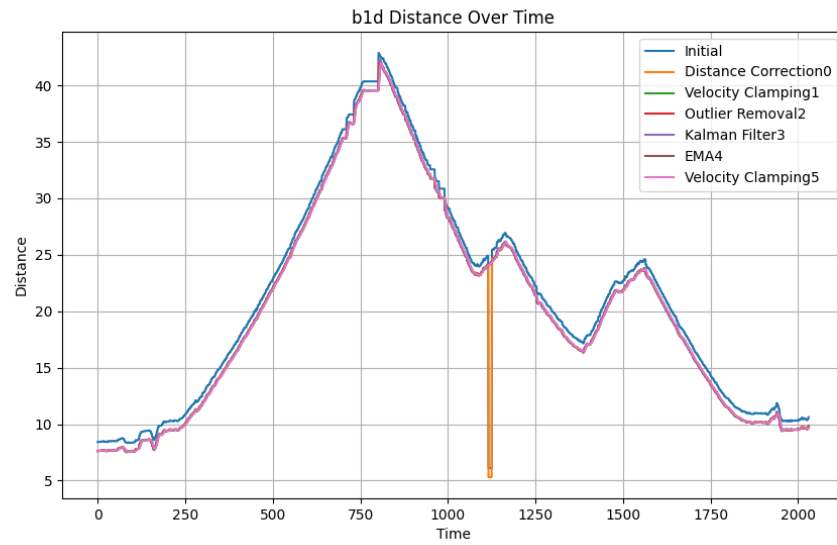

Figure 1: b1d Distance Over Time

2 1D b2d_distance

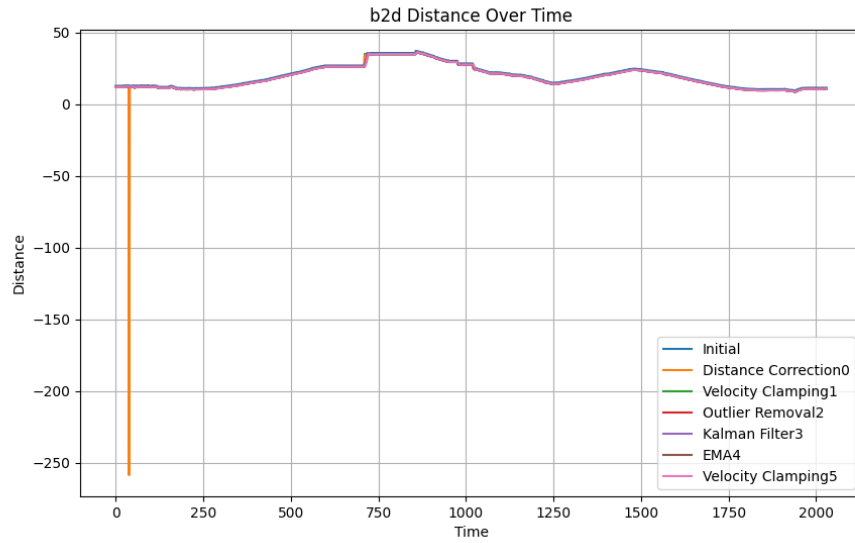
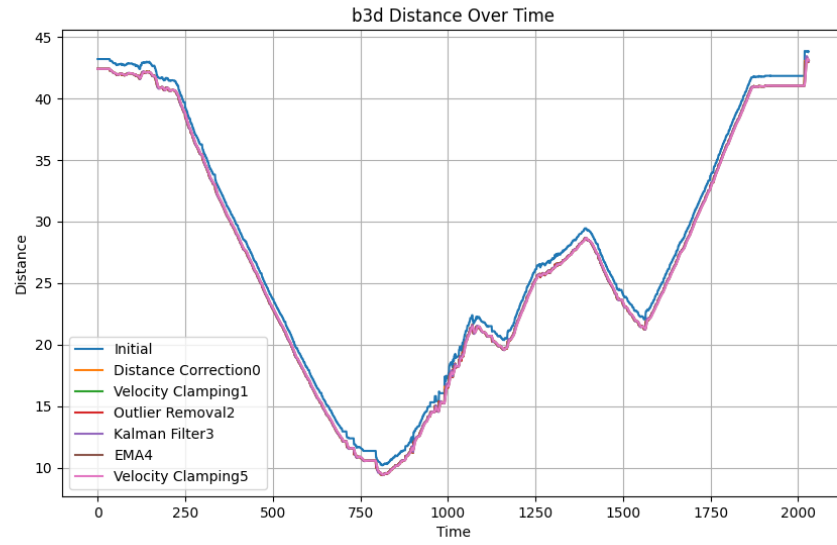Figure 2: b2d Distance Over Time

3 1D b3d_distance

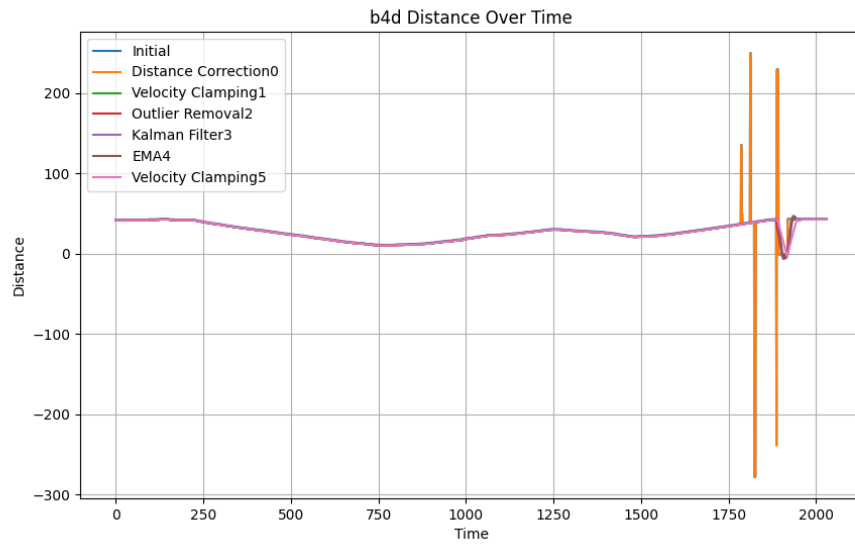
Figure 3: b3d Distance Over Time

4 1D b4d_distance

Figure 4: b4d Distance Over Time

5 Initial - Ground Truth

Anchor 1: MAE=1.371 m, RMSE=1.464 m
Anchor 2: MAE=0.879 m, RMSE=1.587 m
Anchor 3: MAE=1.240 m, RMSE=2.685 m
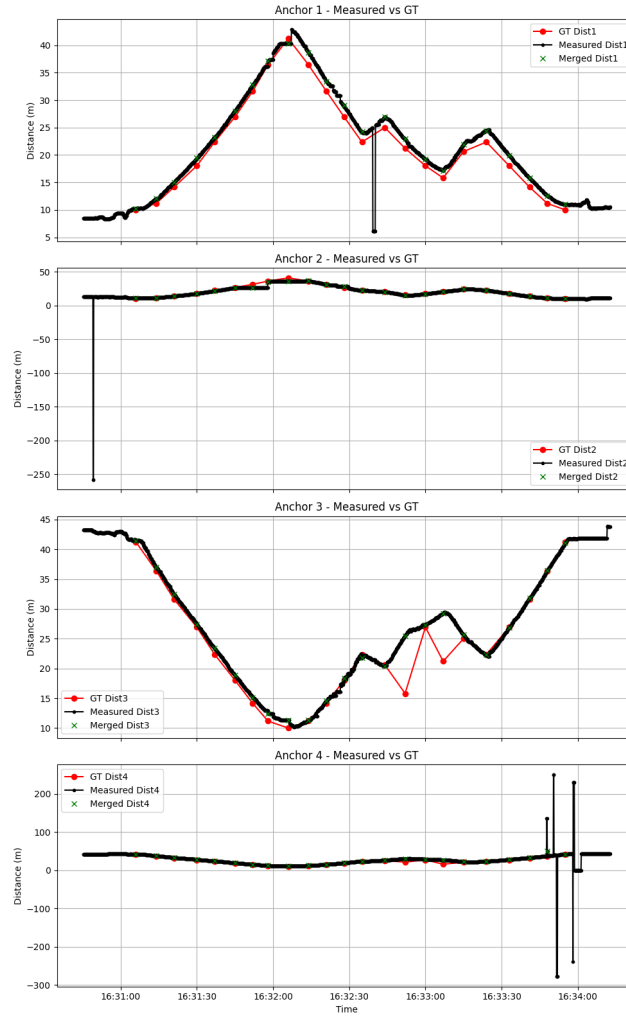Anchor 4: MAE=2.447 m, RMSE=4.288 m

Figure 5: Initial Measured vs GT Distance

6 Distance Correction0 - Ground Truth

Anchor 1: MAE=0.694 m, RMSE=0.842 m
Anchor 2: MAE=1.363 m, RMSE=1.965 m
Anchor 3: MAE=1.184 m, RMSE=2.452 m
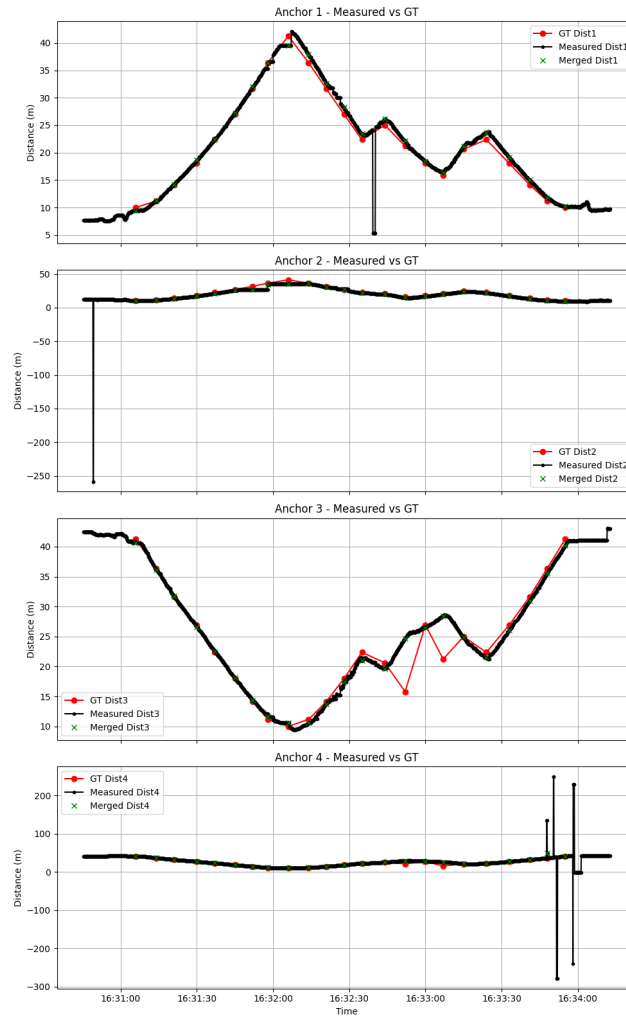Anchor 4: MAE=1.690 m, RMSE=3.887 m

Figure 6: Distance Correction0 Measured vs GT Distance

7 Velocity Clamping1 - Ground Truth

Anchor 1: MAE=0.694 m, RMSE=0.842 m
Anchor 2: MAE=1.636 m, RMSE=2.590 m
Anchor 3: MAE=1.184 m, RMSE=2.452 m
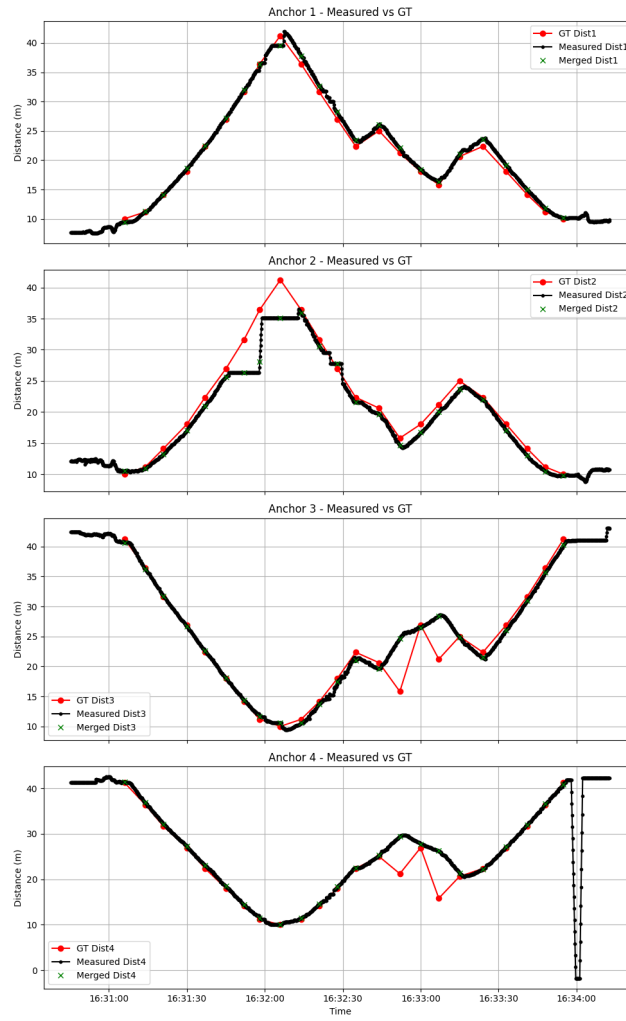Anchor 4: MAE=1.134 m, RMSE=2.796 m

Figure 7: Velocity Clamping1 Measured vs GT Distance

8 Outlier Removal2 - Ground Truth

Anchor 1: MAE=0.694 m, RMSE=0.842 m
Anchor 2: MAE=1.636 m, RMSE=2.590 m
Anchor 3: MAE=1.184 m, RMSE=2.452 m
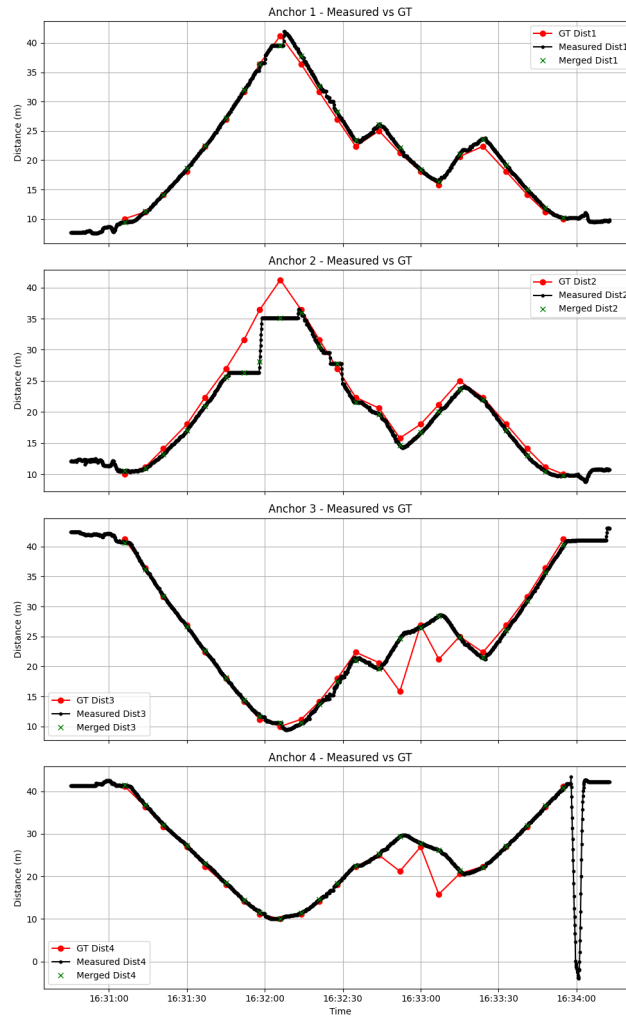Anchor 4: MAE=1.134 m, RMSE=2.796 m

Figure 8: Outlier Removal2 Measured vs GT Distance

9 Kalman Filter3 - Ground Truth

Anchor 1: MAE=0.712 m, RMSE=0.848 m
Anchor 2: MAE=1.674 m, RMSE=2.684 m
Anchor 3: MAE=1.203 m, RMSE=2.460 m
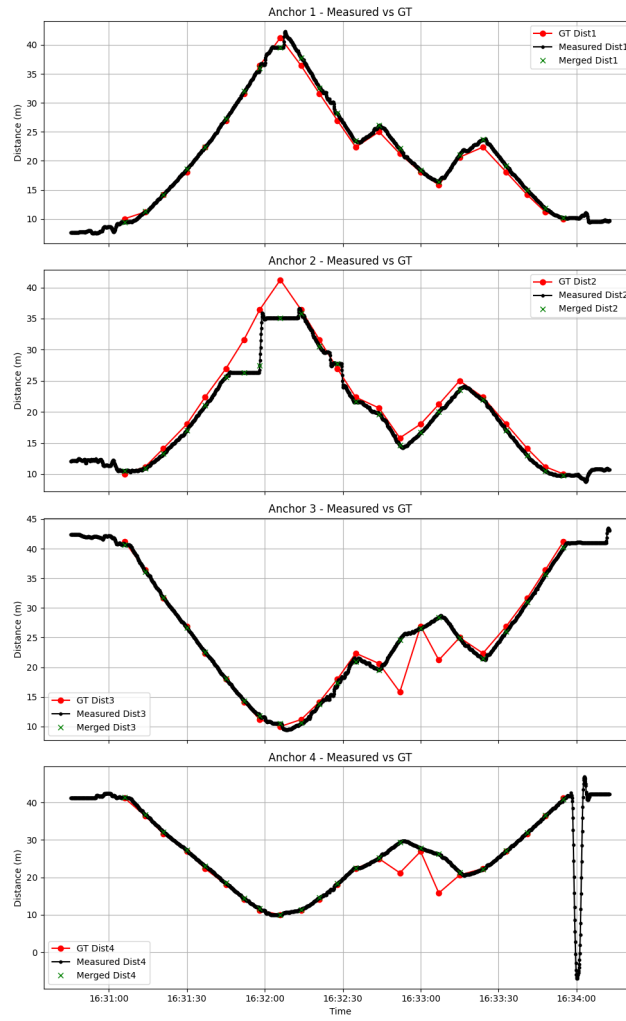Anchor 4: MAE=1.141 m, RMSE=2.800 m

Figure 9: Kalman Filter3 Measured vs GT Distance

10   EMA4 - Ground Truth

Anchor 1: MAE=0.734 m, RMSE=0.884 m
Anchor 2: MAE=1.699 m, RMSE=2.785 m
Anchor 3: MAE=1.241 m, RMSE=2.448 m
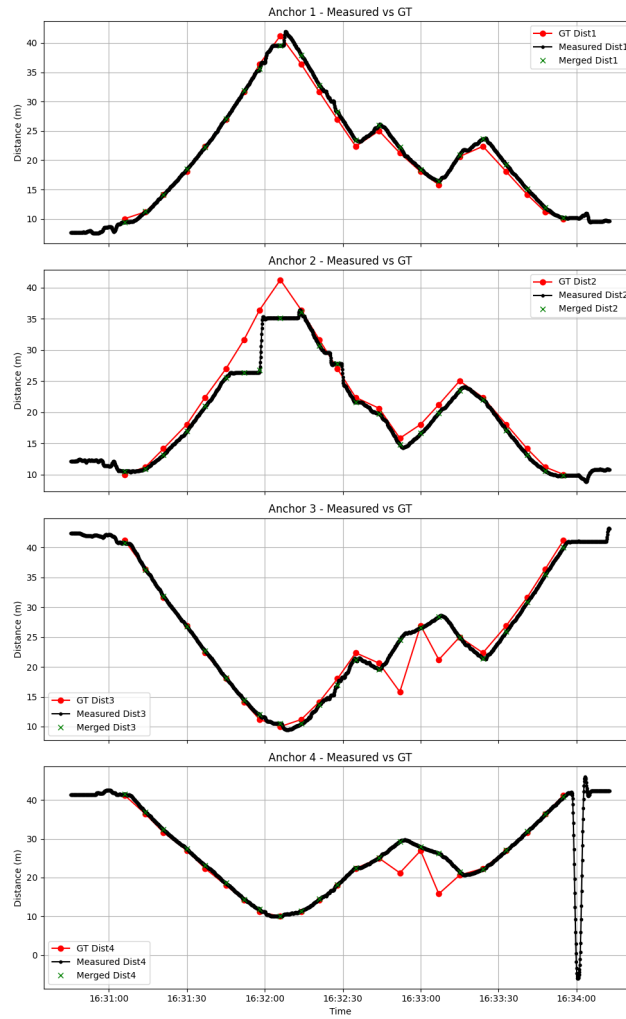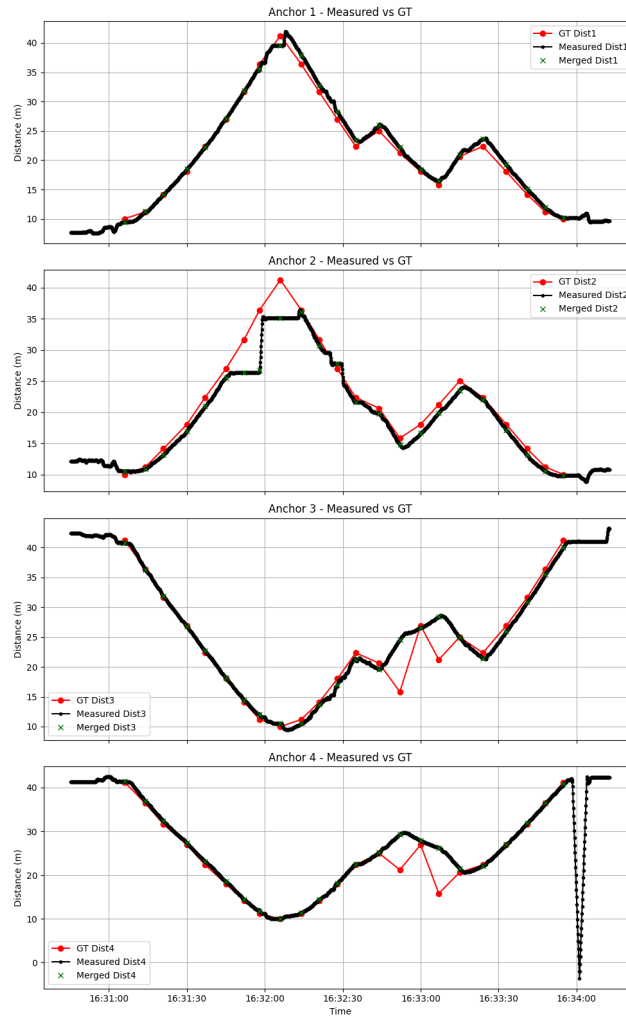Anchor 4: MAE=1.162 m, RMSE=2.799 m

Figure 10: EMA4 Measured vs GT Distance

11   Velocity Clamping5 - Ground Truth

Anchor 1: MAE=0.734 m, RMSE=0.884 m
Anchor 2: MAE=1.699 m, RMSE=2.785 m
Anchor 3: MAE=1.241 m, RMSE=2.448 m
Anchor 4: MAE=1.162 m, RMSE=2.799 m

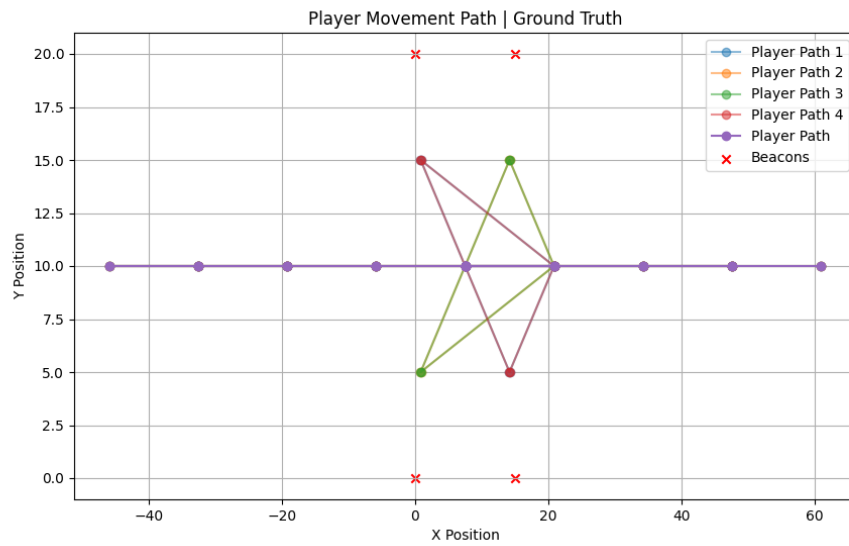Figure 11: Velocity Clamping5 Measured vs GT Distance

12   Ground Truth

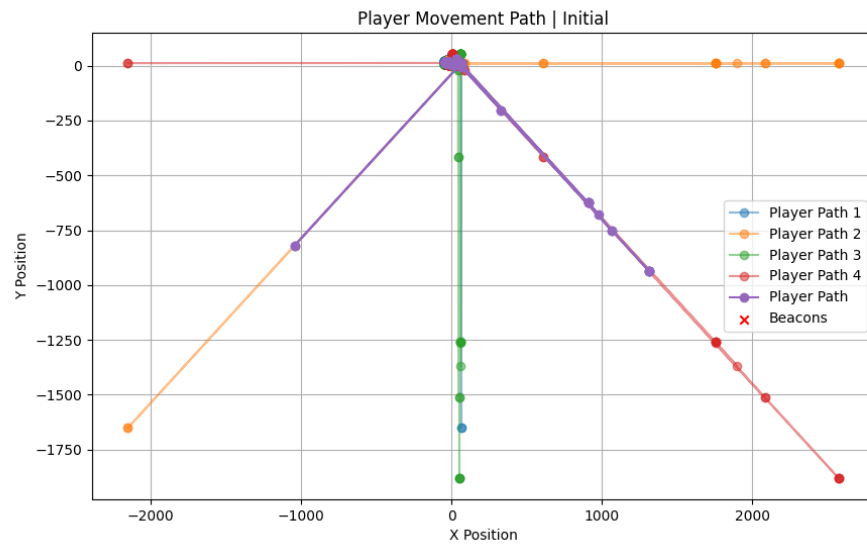
Figure 12: Ground Truth Player Movement Path

13 Initial

Figure 13: Player Movement Path

14 Distance Correction0
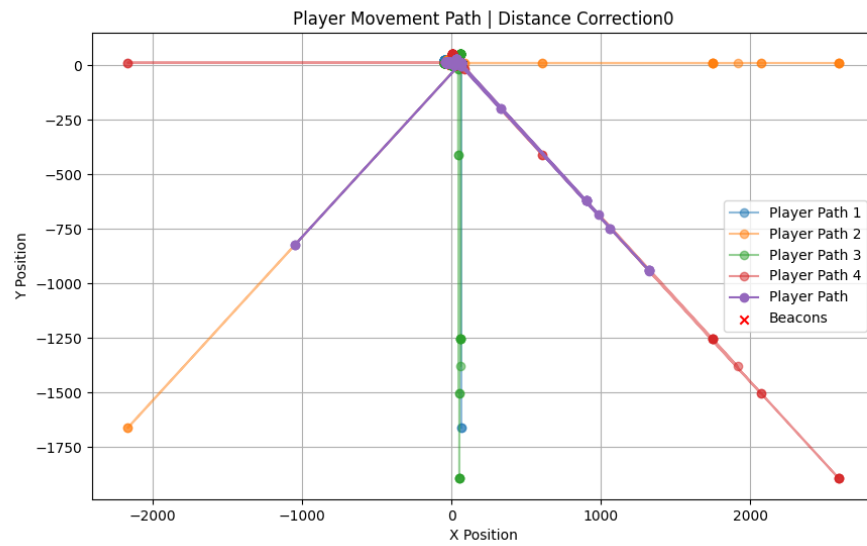

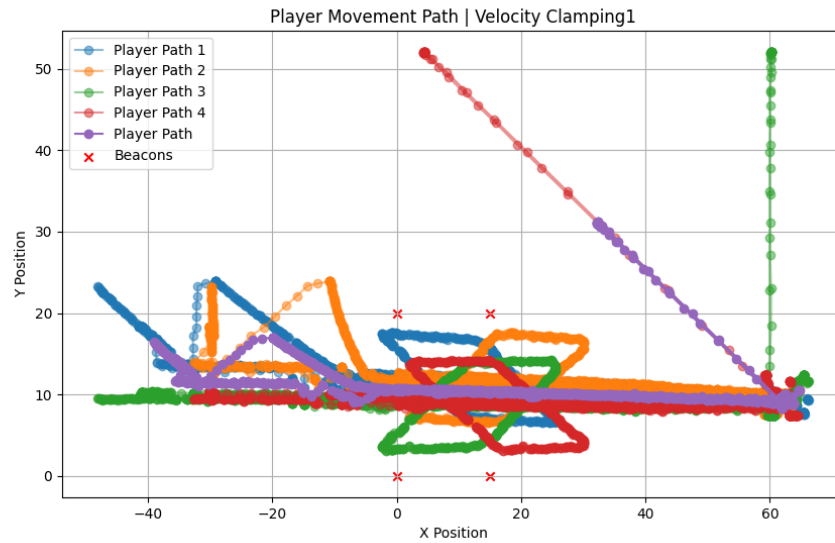Figure 14: Player Movement Path

15   Velocity Clamping1

Figure 15: Player Movement Path

16 Outlier Removal2
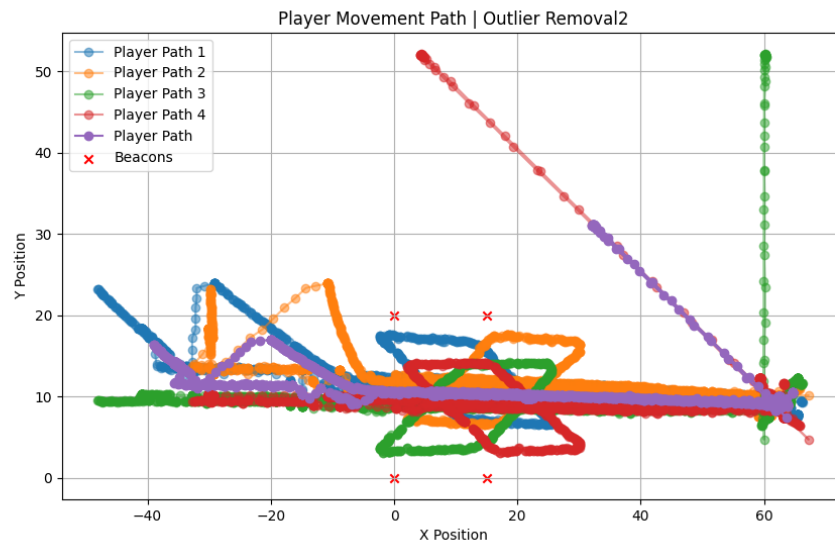

Figure 16: Player Movement Path
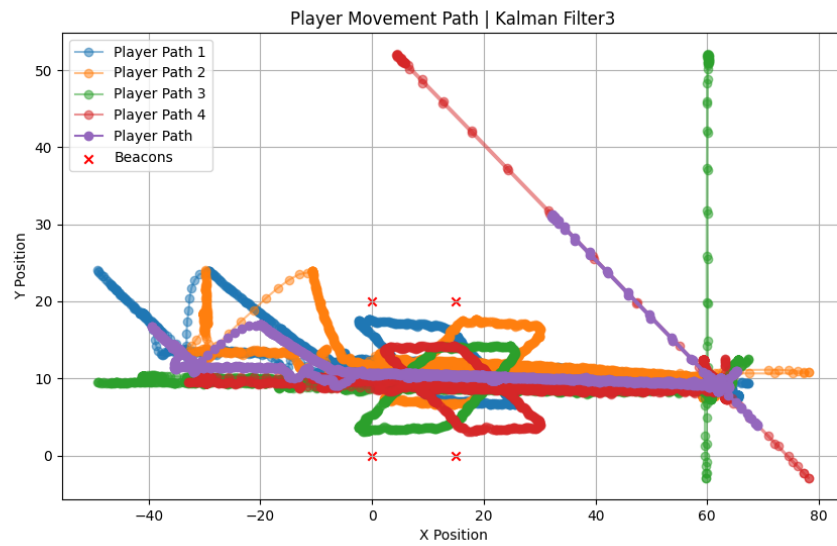
17 Kalman Filter3

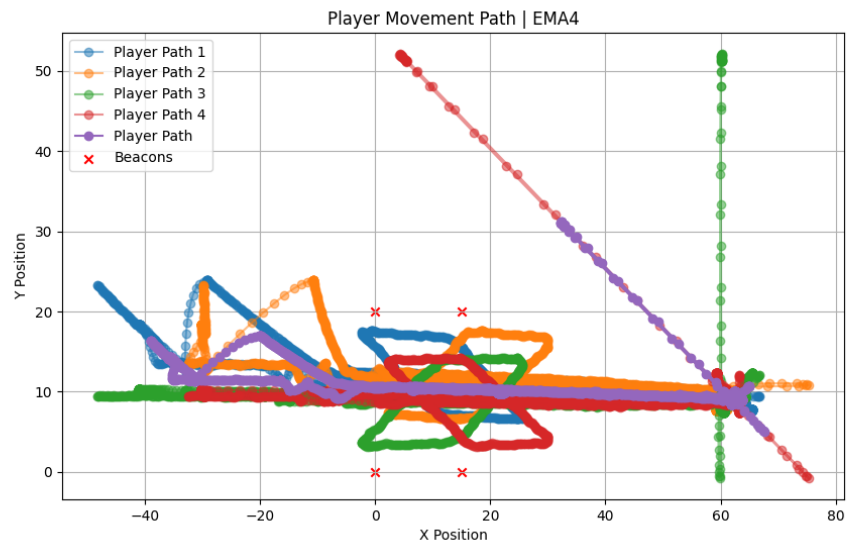Figure 17: Player Movement Path
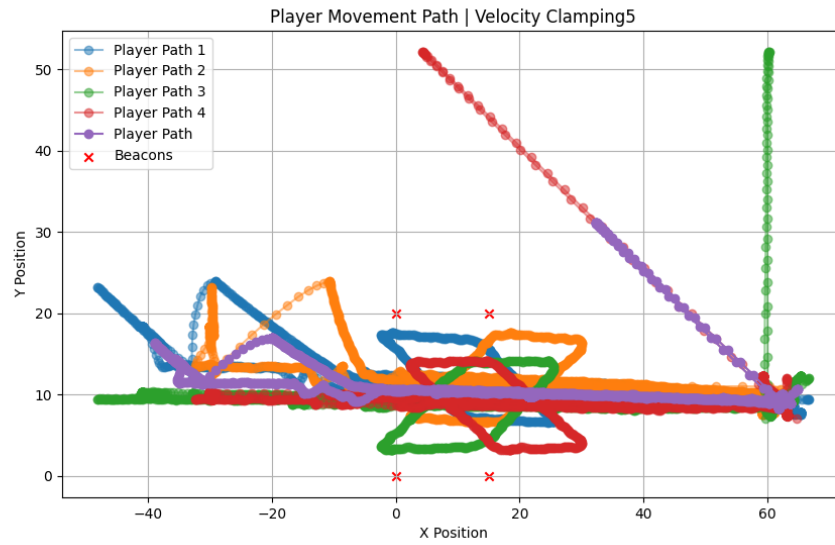
18   EMA4

Figure 18: Player Movement Path

19 Velocity Clamping5

Figure 19: Player Movement Path