Multi-Object Tracking and Sensor Fusion

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Goal and Tools

- Develop multi-object tracking with sensor fusion using Lidar and camera data from the NuScenes dataset.
- Main tools:
  - Kalman Filter for data fusion,
  - Particle Filter for prediction,
  - Hungarian-algorithm.

Code Execution

- Runs data calibration,
- projects Lidar to camera frames,
- associates objects using the Hungarian algorithm,
- and applies filters for position tracking.

Functionality

- Calibrates and aligns sensor data,
- associates Lidar points with camera-detected objects,
- and tracks positions using Kalman and Particle filters.

Results and Challenges

- High RMSE (1270.68) revealed tracking limitations due to linear assumptions, association challenges, and parameter tuning.

Takeaways

- Learned the importance of precise calibration, robust data association, and the need for non-linear filters to handle complex motion.