



based on my data the above is my problem statement for sure right

Yes, based on your data and the column structure you described, **the problem statement outlined above is accurate for your case.**

Why This Matches Your Data

- **Inputs:** You provide the radar's position ($\text{pos}_x, \text{pos}_y, \text{pos}_z$), velocity ($\text{vel}_x, \text{vel}_y, \text{vel}_z$), and range at a given instant, which are standard features needed to calculate predicted trajectories or interception scenarios.
 - **Outputs:** Your outputs are sets of predicted 3D points ($\text{pipx1}, \text{piPy1}, \text{pipz1}, \dots, \text{pipz4}$) and the corresponding times to reach these points ($\text{tgt_time1}, \dots, \text{tgt_time4}$). This exactly fits the definition of finding where and when the radar-guided object will meet (intercept) a moving target.
 - **Context:** This setup is directly in line with typical radar interception, guidance, and trajectory prediction problems described in the literature, where the task is to estimate future meeting points and times based on the current kinematic state of a pursuing platform.
- [1]

Confirmed Problem Statement

Given the current 3D position, velocity, and range of a radar-guided object, predict the next several interception points (locations in space) and the time required to reach each one.

This is exactly the problem you are trying to solve with your data and model.



1. <https://journals.sagepub.com/doi/10.1177/00202940221118354>