Trajectory Generation Problem

Problem

Given a set of points representing cones detected by the perception, generate the middle line of those cones. The middle line found will be used as a trajectory to move the car between the cones, this implies that the trajectory does not need to be a perfect middle line but as good as it permits the car to stay in between the cones with a good threshold.

Tasks

1. Analyze the possible Edge Cases in the perception data generation (some provided below).
2. Create a dataset generator that can simulate all the edge cases.
3. Start ideal data and generate the middle line between the cones
4. Find a solution that can generate an optimal trajectory for the problem

In the process document all the edge cases and the program produced so that everybody can run the code and interpret the results.

Code

Produce two programs:

- Data generator: with some parameters in input, produce a file with the generated data. This script can be in python.
- Problem solver: a program that takes in input a set of cones from the generator can produce a trajectory. Some tests can be made in Python but the final solution has to be made in C++

Examples

Edge cases