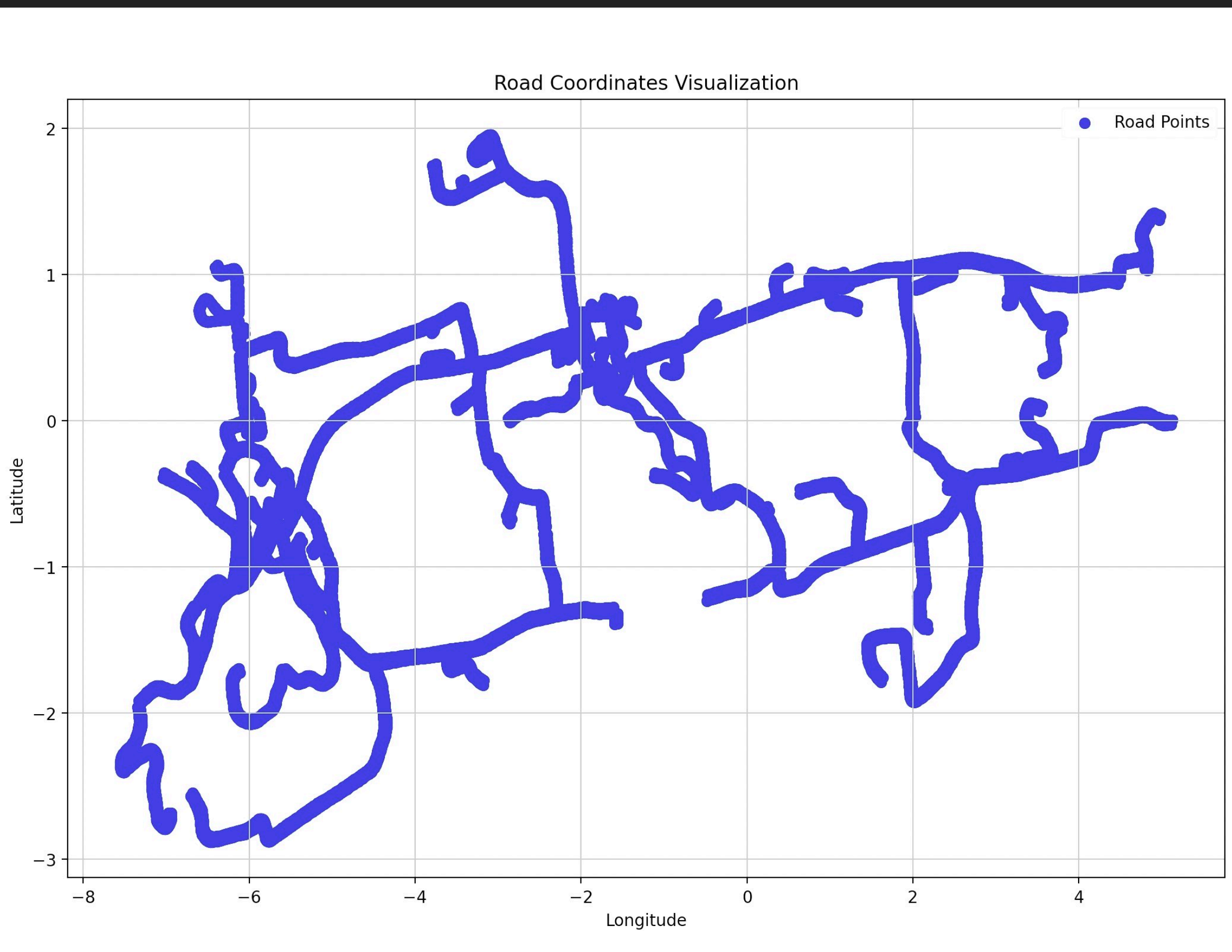


THE TRUCKERS

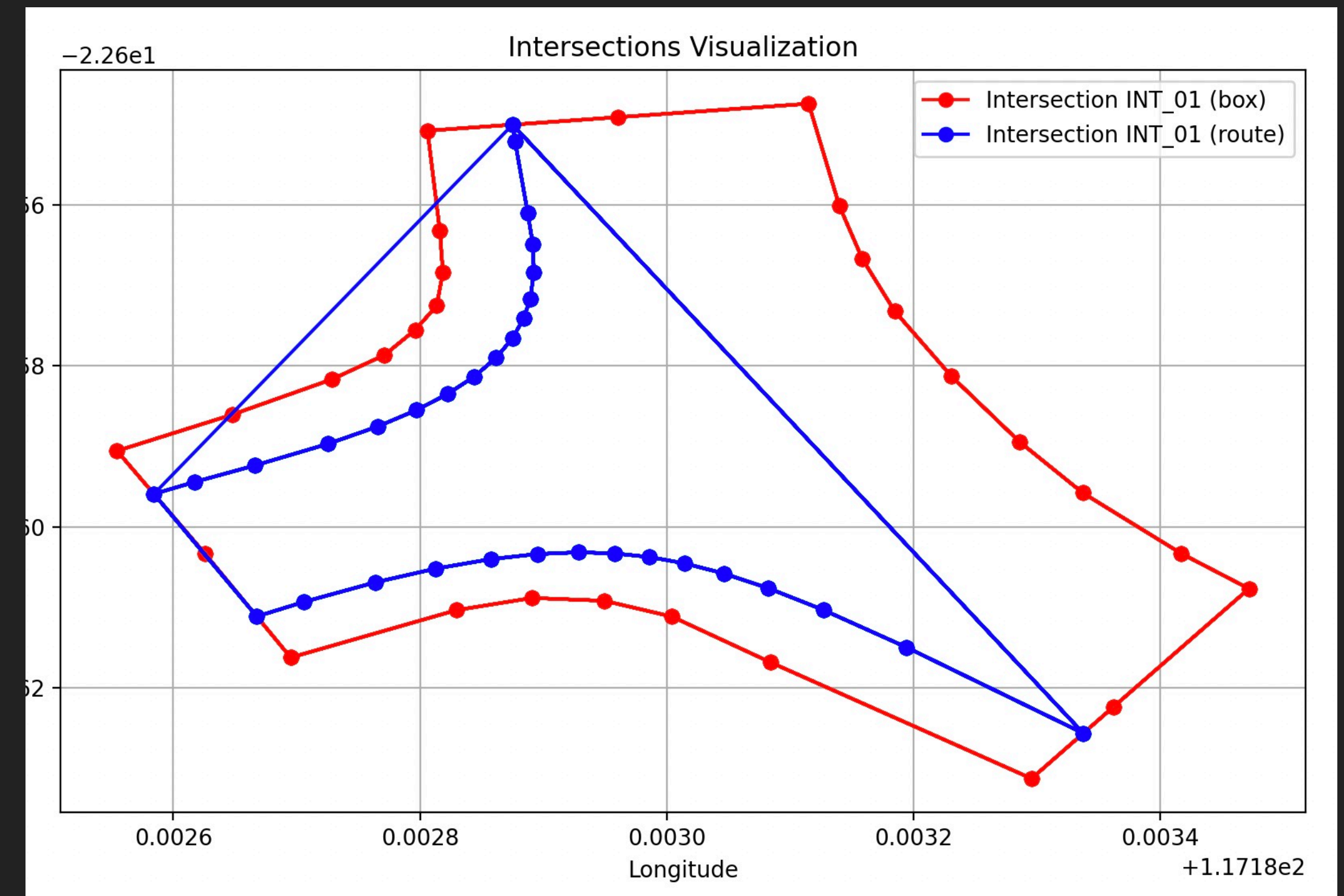
OUR SOLUTION



PROBLEM CASE

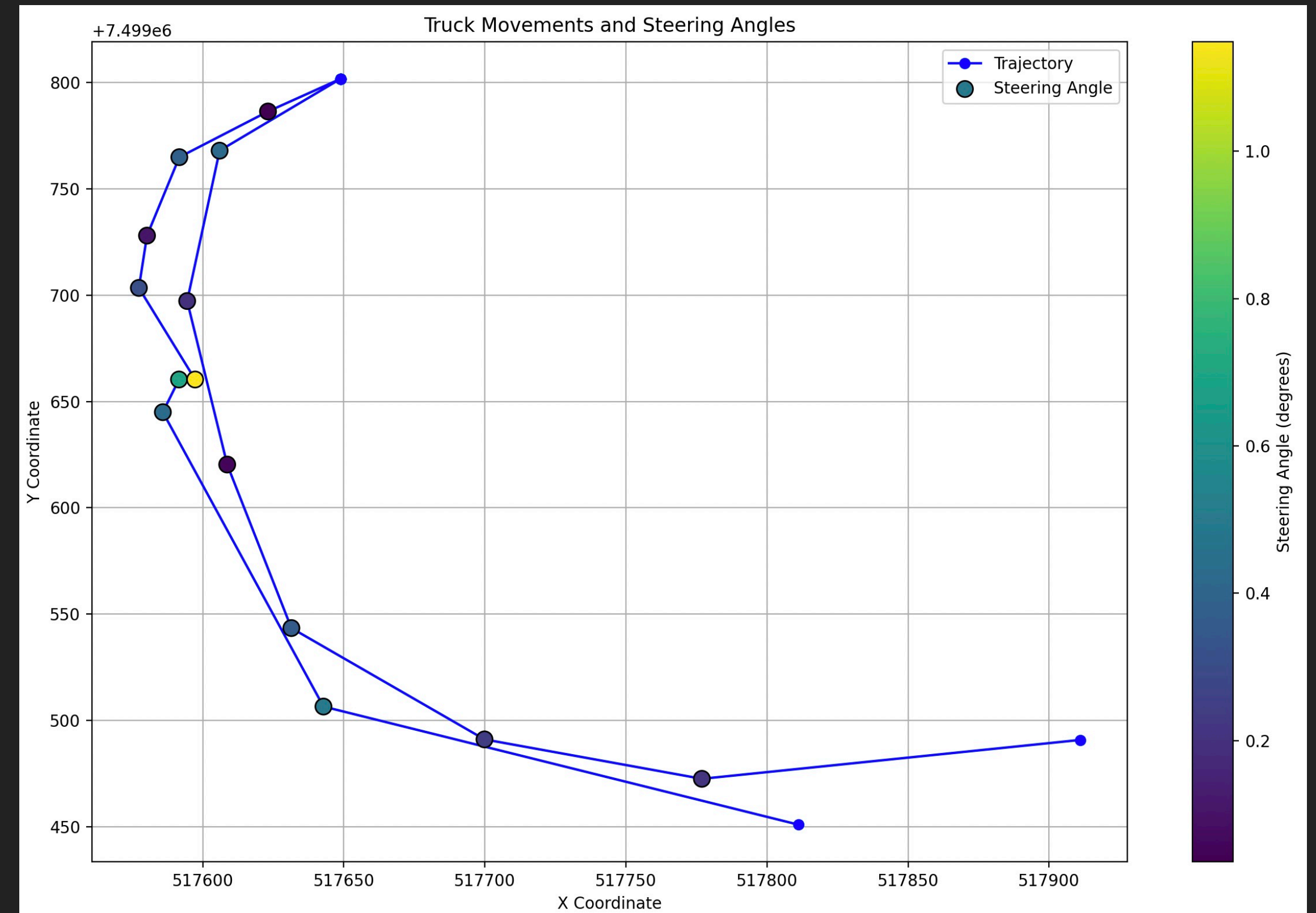
CHALLENGE

- ▶ Given a set of coordinates which map a T-junction, Determine the most efficient path for trucks navigating through said junction.
- ▶ What is an appropriate way to grade a chosen path as a "good" one?
- ▶ Ensure that the path lies within the given constraints for safe operation.
- ▶ We cannot modify Frontrunner as it's externally managed.



IDENTIFYING A GOOD CURVE

- ▶ Highlighted areas with high steering angles (yellow) indicate potential sharp turns that should be minimised.
- ▶ Sections with low steering angles (green) represent smoother paths that are preferable for maintaining truck stability and safety

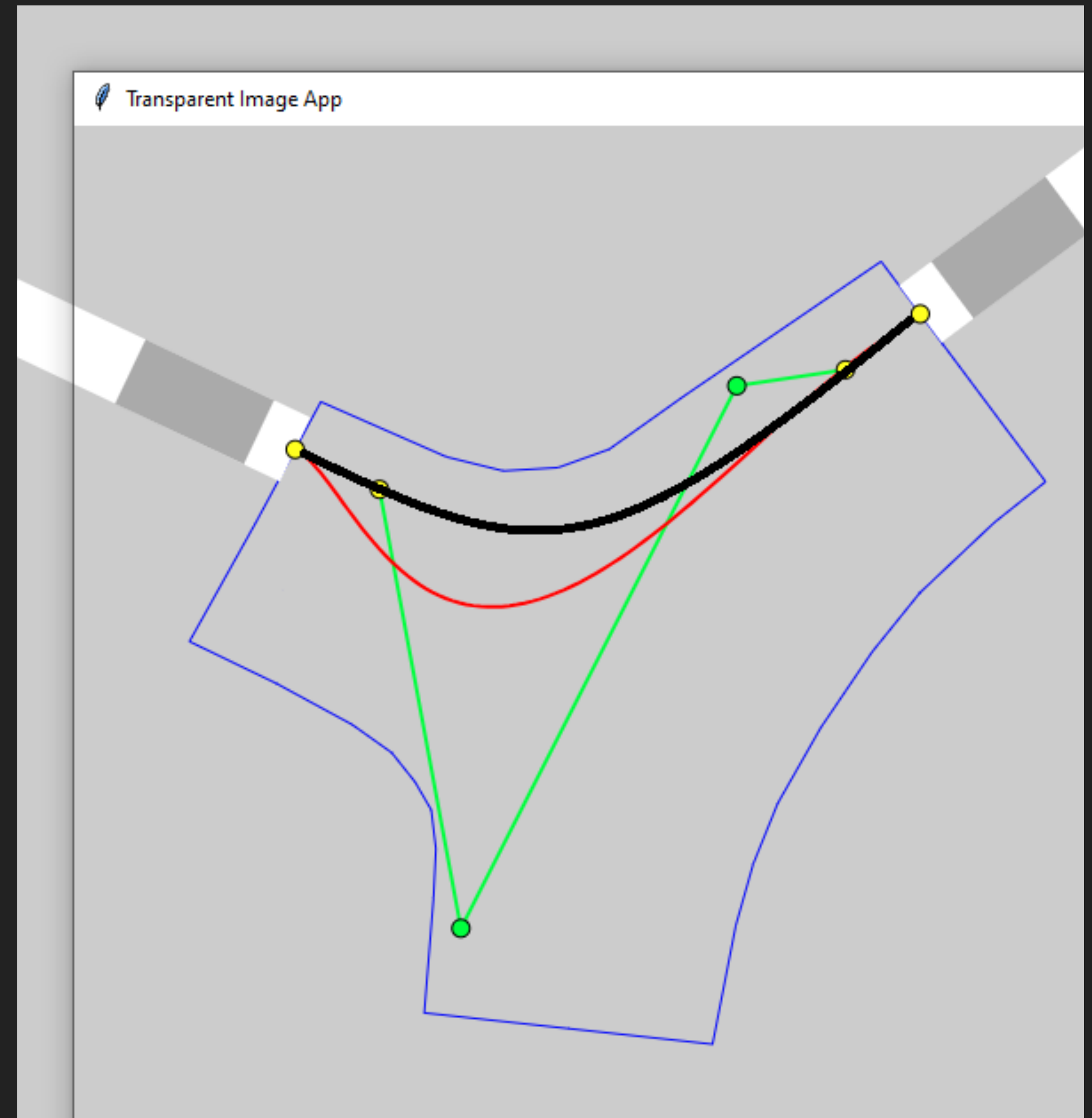


PROPOSED SOLUTION

- ▶ Given a bounding box of the topology of the intersection we can map fixed points for which to draw our curve from.
- ▶ We chose a bezier curve as its the simplest to manipulate and adjust.
 - ▶ Simply click and drag the control points

INTEGRATION

- ▶ Frontrunner operates as a black box.
- ▶ We need a way to manually adjust Frontrunner's path through a junction and change it to align with our proposed path.
- ▶ Using computer vision to extract the control point coordinates, we can overlay a visual path as a stencil on the Frontrunner control software.
- ▶ Ideally, we would use mouse automation to adjust the Bezier curve accordingly.



IMPROVEMENTS

- ▶ Further develop the application to allow stencil to seamlessly overlay the Frontrunner control software. The user shouldn't need to move the stencil to modify the path beneath
- ▶ Develop a unified application to calculate the optimal path as well as overlay the path onto control software.
- ▶ Implement mouse automation for adjusting bezier curve.