Closest Points On Two Non-Intersecting Lines

A picture containing text, way, light, sidewalk

Description automatically generated

The closest points between these two lines occur when these conditions are met:

and

1)

2)

Equations 1) and 2) can be combined into the following system in the form where:

Therefore:

,

Substituting these solved values and into and , yields the closest points between the two lines. The point in the middle between these two is considered to be point in 3D space on the burgerbot that is closest to the wafflebot. Theoretically, and ideally and would intersect but due to sensor noise, computation process and algorithm inaccuracies, these lines will never perfectly intersect.