**Introduction**

A single traffic camera can only see the front of objects, and not what is behind them. Multiple 3D cameras will remove the blindspots, but they need to be calibrated.

**Point Transformations**

OpenCV and ArUco markers (On the cube) were used to detect points that multiple cameras can see in the Cosmos model intersection. The Kabsch algorithm was utilized to get a translation and rotation to move the points to each other.

**Good Calibration**

The image below is the best calibration so far, with the crosswalk continuing from one camera to the other.

**ROS/RVIZ**

The Robotic Operating System and its visualizer were used to show transformed point clouds. This was inconsistent and had constant error.

**Object Detection**

The YOLOv8 deep learning model was used to detect and segment objects in the intersection. A model to detect DIY robotic cars was created.

**Point Cloud Streaming**

Python sockets were used to create a custom streaming service for point clouds. Open source options were insufficient, a custom solution transferred the points directly.

**Image Masks**

The points for objects detected were obtained so that multiple cameras could be used to separate and track objects in 3D.

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