# 10xConstruction

Task

A 3D cuboidal box is rotating around its central axis, and you are given a task to estimate its rotation angle. To do this, you are provided with a depth imaging sensor, mounted on a wall facing the cuboid. The depth sensor captures frames at various timestamps, with each timestamp viewing the cuboidal box at a different face angle.

Implement a simple algorithm to estimate the following -
1. **Normal angle** and the **visible area (in m^2)** of the **largest visible face (in terms of area)** of the box with respect to the camera normal, at each timestamp.
2. Axis of rotation vector about which the box is rotating
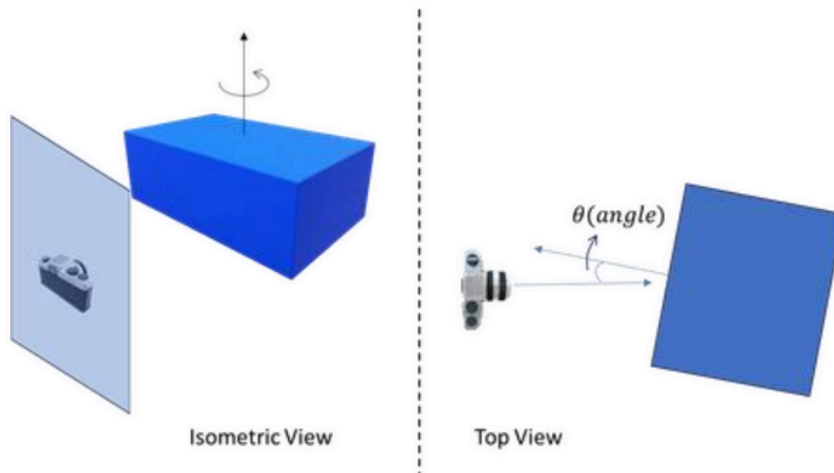
Input: A ROS bag file (depth_data.bag) with depth images (an n x m array with distance values) at different timestamps. All data is in SI units (meters, seconds).

What to submit:
• A Python script with clear comments.
• A table with image number and corresponding estimated normal angle and visible area.
• A text file containing the axis of rotation vector with respect to the camera frame
• A document describing your approach and the algorithm.