

1 Supplementary material

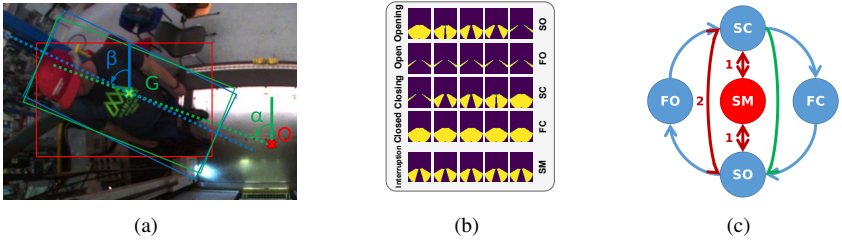


Figure 1: **1(a)** Example of a axis-aligned (red), radius-oriented (green) and human-oriented (blue) bounding boxes. O and G are the image center and the instance centroid. α and β are the radius-oriented and body-oriented bounding boxes orientation angles. **1(b)** Doors masks for the states "Start Opening" (SO), "Fully Opened" (FO), "Start Closing" (SC) and "Fully Closed" (FC) and "Stopped Midway" (SM). **1(c)** Possible transitions between doors states. Doors states in blue are considered normal doors states while the Stopped Midway (SM) state, in red, is anomalous. The transitions ($SC \rightarrow SO$ and $SO \rightarrow SC$) while theoretically possible are ignored in our study.

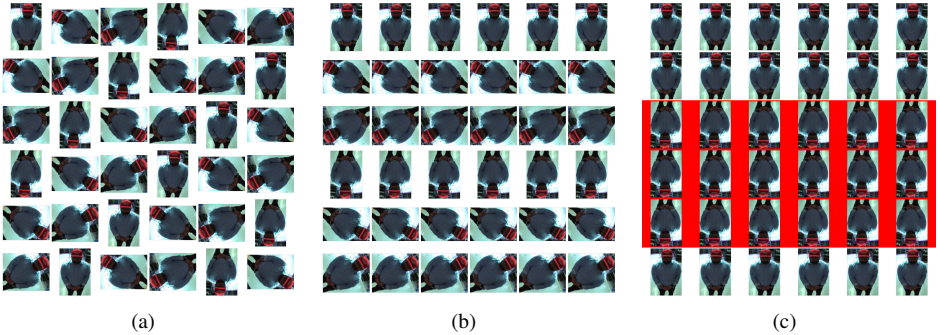


Figure 2: Toy example of the resulting bounding boxes following the axis-aligned (**2(a)**), radius-aligned (**2(b)**) and human-aligned (**2(c)**) conventions. Following [8][17], the boxes orientation angles are defined counter clockwise with respect to the y rising axis in the $[-90^\circ, 90^\circ]$ range. This definition ensures a single possible definition of a given bounding box. The pedestrian mask starts off in the center of the top hemisphere of the fish-eye cameras and is subject to rotations of 60, 120, 180, 240 and 300 degrees counter-clockwise with respect to the center of the image (x axis) and the center of the instance mask (y axis). While the resulting cropped image in **2(a)** is impacted by both types of rotation, those in **2(b)** are only impacted by the rotations around the center of the mask. Finally, cropped images in **2(c)** are upright for angles of rotation in $[-90^\circ, 90^\circ]$, and upside-down otherwise (highlighted in red).