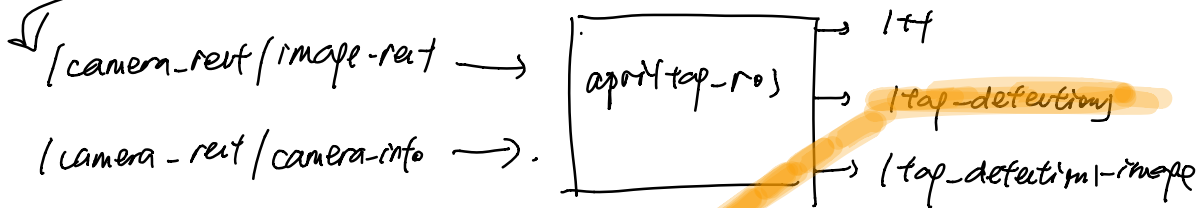
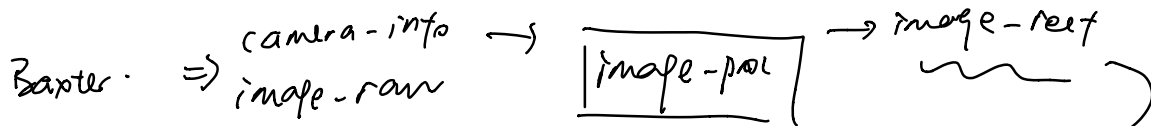
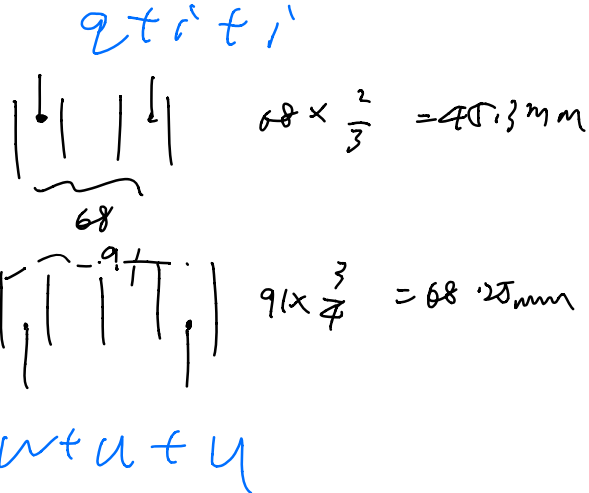


keyboard - white : $\geq 1\text{mm}$

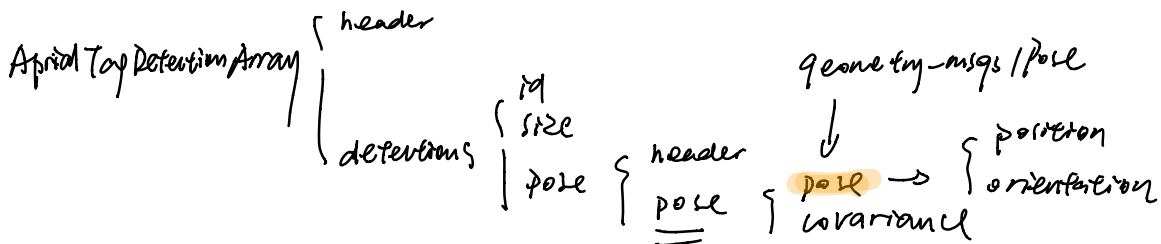
gap = 2mm

→ { } keys : 68mm

4 keys : 91mm



type = apriltap-ros / ApriltapDetectionArray



```
sub_callback (msg) {
```

```
    tag_pose = msg.detection[0].pose.pose.pose  
}
```

pose in camera
frame

Know: tag pose in end-eff frame (T_{ef})
end-eff pose in world frame. (baxter)

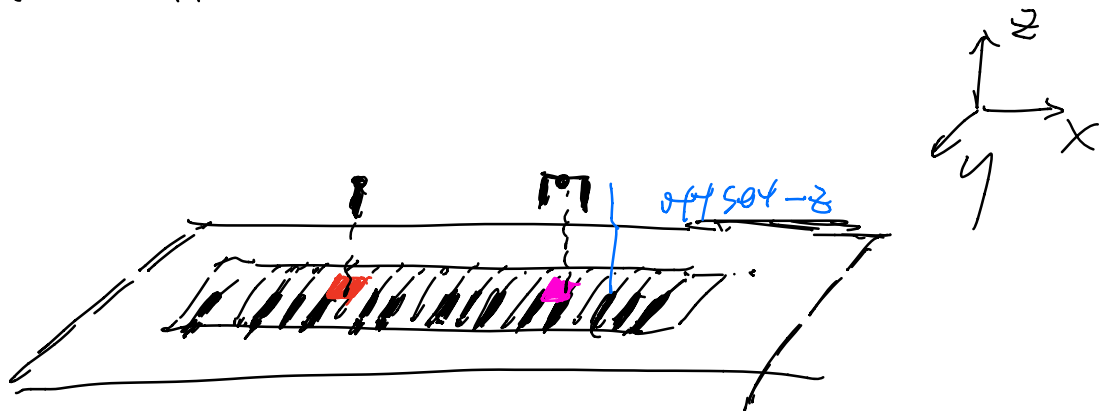


Transformation matrix

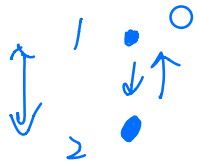
(T_{be})

goal: tag pose in baxter frame. $T_{bf} = T_{be} \cdot T_{ef}$
=

① standoff pose



play notes.



left: offset on X direction

right { offset <center>
gripper. open & close.