36. KCF object tracking

36.1. Overview

KCF stands for Kernel Correlation Filter. It was proposed by Joao F. Henriques, Rui Caseiro, Pedro Martins, and Jorge Batista in 2014. It caused a sensation after it came out. This algorithm has very impressive performance in both tracking effect and tracking speed, so it has attracted a large number of scholars to study this algorithm and the industry has also applied this algorithm in actual scenarios. The correlation filter algorithm is a discriminative tracking algorithm, which mainly uses the given samples to train a discriminant classifier to determine whether the tracked object is the target or the surrounding background information. It mainly uses the rotation matrix to collect samples and the fast Fourier transform to accelerate the algorithm.

36.2, Startup

Terminal input,

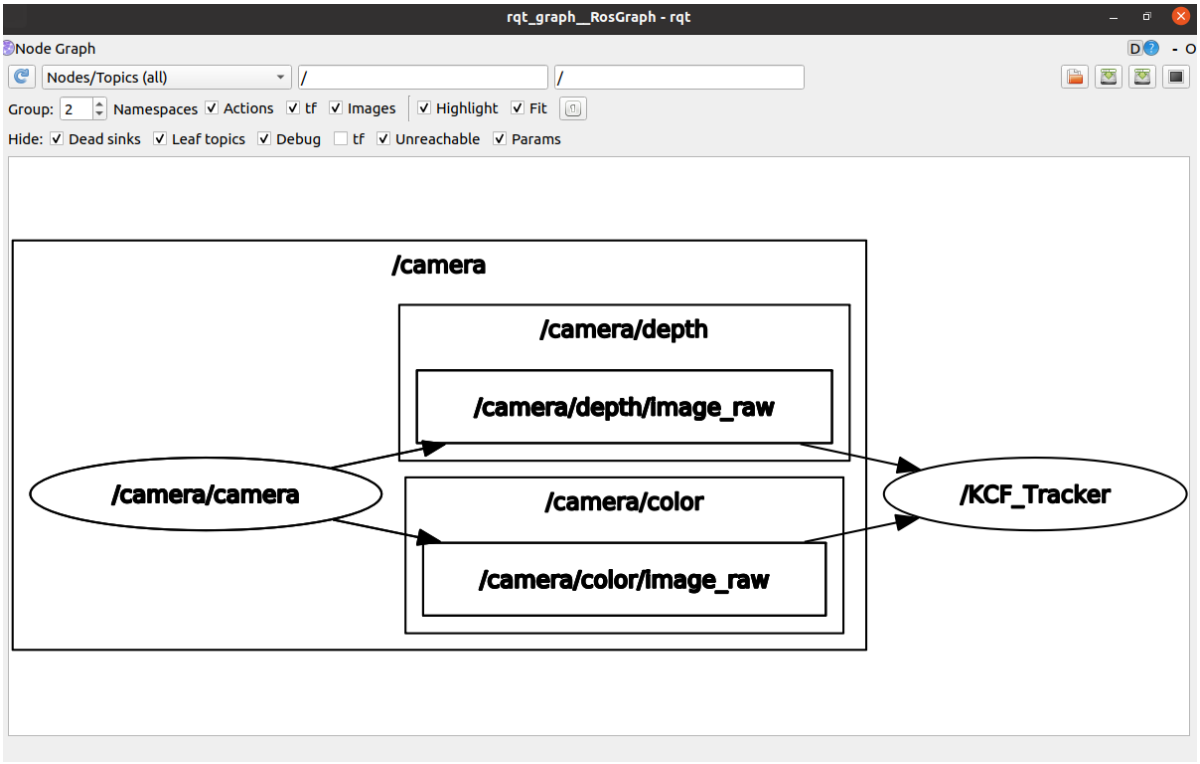
```
roslaunch astra_tracker KCFTracker.launch
```

After startup, enter the selection mode, use the mouse to select the location of the object, as shown in the figure below, and release it to start recognition.

X and Y represent the center point of the object in the image, and Z represents the distance in meters and cm.

View the node relationship diagram,

```
rqt_graph
```


rqt_graph__RosGraph - rqt
Node Graph
Nodes/Topics (all)
Group: 2
Namespaces
Actions
tf
Images
Highlight
Fit
Hide:
Dead sinks
Leaf topics
Debug
tf
Unreachable
Params
/camera
/camera/depth
/camera/depth/image_raw
/camera/camera
/camera/color
/camera/color/image_raw
/KCF_Tracker