36. KCF object tracking

36.1. Overview

KCF stands for Kernel Correlation Filter Kernel Correlation Filtering Algorithm. It was proposed by Joao F. Henriques, Rui Caseiro, Pedro Martins, and Jorge Batista in 2014. After the algorithm came out, it was considered a sensation. This algorithm has very outstanding performance in both tracking effect and tracking speed. Therefore, a large number of scholars have been studying this algorithm, and the industry has also gradually applied this algorithm in actual scenarios. The correlation filtering algorithm is considered a discriminant tracking, which mainly uses the given samples to train a discriminant classifier to determine whether the target or the surrounding background information is tracked. The rotation matrix is mainly used to collect samples, and the fast Fourier transform is used to accelerate the calculation of the algorithm.

36.2. Start

Terminal input,

```
roslaunch astra_tracker KCFTracker.launch
```

After starting, enter the selection mode, use the mouse to select the location of the object, as shown in the figure below, 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
```