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# 机械臂视觉抓取问题汇总

### 1、如果出现中间位置（小车正前方的位置）抓取不好的情况，有一定可能性是因为底部轴零位位置机械参考点不正确，需要校准底部参考点

1）具体问题可以看下面的“***偏左，撞击***”，这个撞击位置是出现在机械臂的正前方（也就是小车的正前方），也就是此时

Object world\_pos:header:

seq: 0

stamp:

secs: 0

nsecs: 0

frame\_id: "base\_link"

point:

x: 0.3714150012985275

y: -0.002300212686588178

z: 0.17105982370562367

此时物体在"base\_link"坐标系下的Y坐标为接近零，但是此时正常情况下机械臂的抓取位置是最好的，但是这个时候出现物体在（"base\_link"坐标系下的Y坐标为接近零）正前方时夹具偏左，

* 物体在小车左边时，接近正前方时，出现夹具偏左
* 物体在小车最左边，正常
* 物体在小车最右边，正常

就是小车正前方出现的问题时，

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| 最右侧：正常  Object camera\_pos:[0.09196542892456055, 0.02924311065673828, 0.22501499938964847]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3650150026374186  y: -0.05196542289530698  z: 0.17075689537251523  Object opt\_world\_pos: x:0.370015 y:-0.056965 z:0.165757  pre\_grasp\_pos:(-0.21526654915843504, 0.9119769472919915, 0.5374273798104473, 0.6997027308840049, -0.11895449285648599)  grasp\_pos:(-0.21526654915843504, 0.9245054153588012, 0.821756151577002, 0.4028454910506406, -0.11895449285648599)  偏左一点  Object camera\_pos:[0.07414884223937988, 0.02916045150756836, 0.22781499938964847]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.36781500215781016  y: -0.034148836135100585  z: 0.17083955459671088  Object opt\_world\_pos: x:0.372815 y:-0.039149 z:0.165840  pre\_grasp\_pos:(-0.15280698138819915, 0.9303702267131041, 0.49608550672962043, 0.7279871847617014, -0.08466612959870225)  grasp\_pos:(-0.15280698138819915, 0.9341099894491451, 0.7964921085030295, 0.4238408202522511, -0.08466612959870225)  偏左  pre\_grasp\_pos:(-0.1549072116600738, 0.9363217356735073, 0.48242143887238037, 0.7355499771252233, -0.08582337365396821)  grasp\_pos:(-0.1549072116600738, 0.9369754497615124, 0.7885384412185964, 0.42877926069100203, -0.08582337365396821)  Center pixel: (266.0, 163.0) center depth: 230  Center pixel: (266.0, 162.5) center depth: 230  Center pixel: (266.0, 162.5) center depth: 230  Center pixel: (266.0, 162.5) center depth: 230  Center pixel: (266.0, 163.0) center depth: 230  Object camera\_pos:[0.05151914024353028, 0.028915476989746097, 0.23001499938964845]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.37001500154488554  y: -0.01151913408030221  z: 0.1710845291734819  Object opt\_world\_pos: x:0.375015 y:-0.016519 z:0.166085  pre\_grasp\_pos:(-0.07420629561718713, 0.9568930756324474, 0.4390824923189372, 0.7625970319970995, -0.041200638256239625)  grasp\_pos:(-0.07420629561718713, 0.9479961644937263, 0.7630698656546697, 0.4475065698000883, -0.041200638256239625)  ***偏左，撞击***  Object camera\_pos:[0.0423002188873291, 0.02894018249511719, 0.23141499938964846]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3714150012985275  **y: -0.002300212686588178**  z: 0.17105982370562367  Object opt\_world\_pos: x:0.376415 y:-0.007300 z:0.166060  pre\_grasp\_pos:(-0.04222938735421432, 0.9912514166100697, 0.3734968689113707, 0.7946847182155051, -0.023456568945116635)  grasp\_pos:(-0.04222938735421432, 0.9678781580752552, 0.7251469739599447, 0.4664078717017459, -0.023456568945116635)  偏左，没有撞击，很差  Object camera\_pos:[0.035217501068115234, 0.029015216827392575, 0.2320149993896484]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.37201500111075736  y: 0.004782505148702626  z: 0.1709847893894252  Object opt\_world\_pos: x:0.377015 y:-0.000217 z:0.165985  pre\_grasp\_pos:(-0.017873517644406665, 1.0123874976058145, 0.3335670711515993, 0.813816592665184, -0.009929628832676975)  grasp\_pos:(-0.017873517644406665, 0.9794037595545306, 0.7038925395519366, 0.4764748623161305, -0.009929628832676975)  正常  Object camera\_pos:[0.013303057689666747, 0.02875943183898926, 0.23301499938964843]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3730150005167084  y: 0.026696948553946005  z: 0.17124057440462342  Object opt\_world\_pos: x:0.378015 y:0.021697 z:0.166241  pre\_grasp\_pos:(0.05683916201406261, 1.1162518619481265, 0.12864388317850223, 0.9142028410275336, 0.031566388086637386)  grasp\_pos:(0.05683916201406261, 1.0181657948109462, 0.6289211709999003, 0.5120116203433156, 0.031566388086637386)  正常  Object camera\_pos:[-0.02481188488006592, 0.02912970161437988, 0.2360149993896484]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3760149995053438  y: 0.06481189120406336  z: 0.17087030470961748  Object opt\_world\_pos: x:0.381015 y:0.059812 z:0.165870  Win Thread Running  pre\_grasp\_pos:(0.18226684236836815, 1.0095653869924728, 0.5157948188304742, 0.49699296729176495, 0.08025507614357981)  grasp\_pos:(0.18226684236836815, 1.0535040863643648, 0.7402121585795332, 0.22863692817081377, 0.0802550761435798)  正常  Object camera\_pos:[-0.044731769943237305, 0.029065336227416992, 0.23801499938964846]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3780149989698679  y: 0.08473177632082454  z: 0.17093467015017016  Object opt\_world\_pos: x:0.383015 y:0.079732 z:0.165935  Win Thread Running  pre\_grasp\_pos:(0.24424960996718495, 1.215935279161655, 0.1193175983332937, 0.6818504370672178, 0.10716290113251624)  grasp\_pos:(0.24424960996718495, 1.1645968511049982, 0.5293540534315033, 0.32315241002566464, 0.10716290113251623)  偏左  Object camera\_pos:[-0.08930987701416016, 0.029521114349365236, 0.23301499938964843]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3730149977876147  y: 0.12930988325777293  z: 0.17047889189424742  Object opt\_world\_pos: x:0.378015 y:0.124310 z:0.165479  pre\_grasp\_pos:(0.3832413652951309, 1.2532625693681665, 0.24335912573637442, 0.37918023778741, 0.12048673474447304)  grasp\_pos:(0.3832413652951309, 1.3005775768241274, 0.4557036932535107, 0.11952066281431278, 0.12048673474447304) |

#### 问题解决：

经过检查发现，机械臂回到原位时，发现最底下的旋转轴零位不是很正，导致夹爪偏左，就是往Y正方向偏，使用校准工具校准后正常

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| Object camera\_pos:[0.0409867841720581, 0.02773542594909668, 0.23401499938964845]  Object world\_pos:header:  seq: 0  stamp:  secs: 0  nsecs: 0  frame\_id: "base\_link"  point:  x: 0.3740150012310528  y: -0.00098677790165045  z: 0.17226458032131092  Object opt\_world\_pos: x:0.379015 y:0.009013 z:0.162265  pre\_grasp\_pos:(0.013644122934259546, 1.0625458198827495, 0.27574188778570047, 0.8215142432699497, 0.00758010595643759)  grasp\_pos:(0.013644122934259546, 1.0234292005264831, 0.6588160091411912, 0.4775567412707253, 0.00758010595643759) |

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| #视觉抓取修正参数  this.x\_offset=0.005 # 相机坐标系的平移修正  **this.y\_offset=0.01 这里由原来的-0.05改成了0.01，说明校准底部轴之前偏差还是很大的。**  this.z\_offset=-0.01  this.c\_x\_factor=1.3 # 相机坐标系x轴上中心点两侧放大  this.err=0.003 # 稳定性检查  this.obj\_width=0.03 # 木块宽度 |

校准完成后，发现这里的Y偏移要向正方向改，说明原来的偏差很大。

经过多测测量，发现正常。待进一步测量。

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