PCL之计算点云质心—pcl::compute3DCentroid()

```
com put roi
   质心计算公式
   质心指的是质量的中心,认为是物体质量集中于此点的假想点。
通常物体质心坐标
                                       P_{c}
计算公式如下:
                       P_{c}=\frac{1}{M}\sum_{n}^{i=0}m_{i}r_{i}
   其中,
                           r_{i} = (x_{i}, y_{i}, z_{i}), i = 1,2, ..., n
为各质点的坐标,
                                      m_{i}
为质点对应的质量。
   PCL函数原理
   计算点云质心时,令上述公式中的
                                     m_{i}=1
即可,则点云质心坐标计算公式如下:
         P_{c}=\frac{1}{n}(\sum_{i=0}^{n}x_{i}, \sum_{i=0}^{n}y_{i}, \sum_{i=0}^{n}z_{i}) 
   PLC函数实现
  1 Eigen::Vector4f centroid; // 順心 pcl::compute3DCentroid(*cloud_smoothed,centroid); // 计算质心
```

该函数的原理即是使用上述公式计算点云质心坐标,接下来通过代码进行验证。

代码实现

```
#include <iostream>
#include <ifyen/Core>
#include <ifyen/Core>
#include <ifyen/Core>
#include <ifyen/Core>
#include <ifyen/Core>
#include <ifyen/Common/transforms.h>
#include <pc]/yoisulization/pc]_visualizer.h>

using namespace std;
typedef pcl::PointXvz PointT;

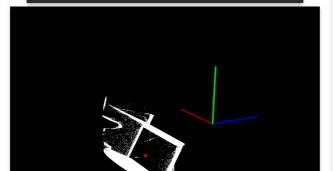
int main(int argc, char **argv)

{
    // $\forall A\text{\text{\text{BointCloud}}}

    // $\forall A\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\te
```

结果

```
pcl计算点云质心结果: -0.0994279
-0.307723
-1.35414
1
按照公式计算点云质心结果: (-0.0994279,-0.307723,-1.35414)
```



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