# **3D激光SLAM点云地图pcd转导航可用的2D栅格地图**

参考

<https://blog.csdn.net/studentu/article/details/119699663?ops_request_misc=&request_id=&biz_id=102&utm_term=pcd2%E6%A0%85%E6%A0%BC%E5%9C%B0%E5%9B%BE&utm_medium=distribute.pc_search_result.none-task-blog-2~all~sobaiduweb~default-0-119699663.142^v99^pc_search_result_base9&spm=1018.2226.3001.4187>

过程如下

# 创建工作空间（可自行创建）

mkdir -p ~/pcd2pgm\_ws/src

cd ~/pcd2pgm\_ws/src

catkin\_init\_workspace

# 克隆代码

git clone <https://github.com/hujiax380/pcd2pgm.git>

# 修改文件中备注的地方

// 代码里只需修改路径和pcd文件名（文件名不用加.pcd）

# 编译

cd ~/pcd2pgm\_ws

catkin\_make

#转化地图

roscore

另起终端

rosrun pcd2pgm pcd2topic

另起终端

rosrun map\_server map\_saver

如果没有安装可视化map\_server则利用以下命令

sudo apt-get install -y ros-noetic-map-server

Las转pcd

代码

//#include<iostream>

//las2pcd

#include <iostream>

#include <iterator>

#include <cstdlib>

#include <liblas/liblas.hpp>//liblas tou wen jin

#include <pcl/io/io.h>

#include <pcl/io/pcd\_io.h>

#include <pcl/point\_types.h>

#include <liblas/reader.hpp>

#include <liblas/factory.hpp>///usr/local/include/liblas/factory.hpp

#include <liblas/detail/fwd.hpp>

#include <liblas/point.hpp>

#include <string.h>

#include <stdio.h>

using namespace std;

string split(const string &str, const string &pattern);//分割字符串的函数声明

int main (int argc, char\*\* argv)

{

std::ifstream ifs(argv[1], std::ios::in | std::ios::binary); // ��las�ļ�

liblas::ReaderFactory f;

liblas::Reader reader = f.CreateWithStream(ifs); // ��ȡlas�ļ�

unsigned long int nbPoints=reader.GetHeader().GetPointRecordsCount();//��ȡlas���ݵ�ĸ���

pcl::PointCloud<pcl::PointXYZRGB> cloud;

cloud.width = nbPoints; //��֤��las���ݵ�ĸ���һ��

cloud.height = 1;

cloud.is\_dense = false;

cloud.points.resize (cloud.width \* cloud.height);

int i=0;

uint16\_t r1, g1, b1;

int r2, g2, b2;

uint32\_t rgb;

while(reader.ReadNextPoint())

{

// ��ȡlas���ݵ�x��y��z��Ϣ

cloud.points[i].x = (reader.GetPoint().GetX());

cloud.points[i].y = (reader.GetPoint().GetY());

cloud.points[i].z = (reader.GetPoint().GetZ());

//��ȡlas���ݵ�r��g��b��Ϣ

r1 = (reader.GetPoint().GetColor().GetRed());

g1 = (reader.GetPoint().GetColor().GetGreen());

b1 = (reader.GetPoint().GetColor().GetBlue());

r2 = ceil(((float)r1/65536)\*(float)256);

g2 = ceil(((float)g1/65536)\*(float)256);

b2 = ceil(((float)b1/65536)\*(float)256);

rgb = ((int)r2) << 16 | ((int)g2) << 8 | ((int)b2);

cloud.points[i].rgb = \*reinterpret\_cast<float\*>(&rgb);

i++;

}

//分割重组字符串

string oss = split(argv[1],".las");

std::cout<<oss<<" Generated! " << std::endl;

pcl::io::savePCDFileASCII (oss, cloud);//�洢Ϊpcd�����ļ�

return (0);

}

string split(const string &str, const string &pattern)

{

string backString;

vector<string> res;

if(str == ""){

std::cout<<"\n输入的字符串为空！\n"<<std::endl;

}

//在字符串末尾也加入分隔符，方便截取最后一段

string strs = str + pattern;

size\_t pos = strs.find(pattern);

while(pos != strs.npos)

{

string temp = strs.substr(0, pos);

res.push\_back(temp);

//去掉已分割的字符串,在剩下的字符串中进行分割

strs = strs.substr(pos+1, strs.size());

pos = strs.find(pattern);

}

//便利vector把每一个保存到string中

// for (std::vector<string>::const\_iterator iter = res.begin(); iter != res.end();iter++)

// {

// cout << \*iter << " ";

// backString = backString + \*iter;

// }

backString = res[0] + ".pcd";

return backString;

}

编译命令

g++ las2pcd.cpp -o las2pcd -llas -lpcl\_io -lpcl\_common

缺少的库文件

安装liblas

sudo apt update

sudo apt install cmake libboost-all-dev

git clone https://github.com/libLAS/libLAS.git

cd libLAS

mkdir build

cd build

cmake ..

make

sudo make install

error while loading shared libraries: liblas.so.3: cannot open shared object file: No such file or directory

sudo ldconfig /path/to/liblas.so.3

fatal error: pcl/io/io.h: 没有那个文件或目录 #include <pcl/io/io.h>

sudo ln -s /usr/include/pcl-1.10/pcl/ /usr/include/pcl

fatal error: Eigen/Core: 没有那个文件或目录 #include <Eigen/Core>

sudo ln -s /usr/include/eigen3/Eigen/ /usr/include/Eigen

Pcd转八叉树地图

参考https://www.cnblogs.com/gaoxiang12/p/5041142.html

基本没有报错