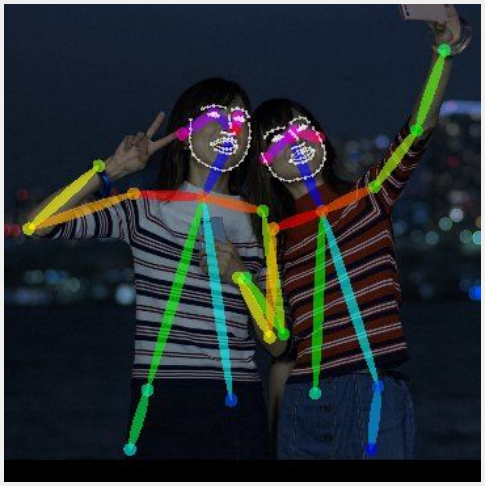
SLAM 3D-Map Visualization in Broser

by nnn112358



I am @nnn112358

My ROS Japan User Group History

ROS Japan UG #10「OpenPose de ROS」

・・・Using OpenPose in ROS.

ROS Japan UG #11「シミュレーションでSLAMを試す」

・・・Try SLAM in my original simulation.

First, This URL Click

https://nnn112358.github.io/pages/potree-develop/examples/lion_laz.html

You can also see this web site on mobile.
Today, My presentaion is how to make this page.

Abstoraction

1.”RtabMap “: 3D SLAM Software

Rtabmap is OSS 3D Slam Software using Kinect or other RGB-D Camera.

Rtabmap generates 3D Point Cloud Map.

2.”Potree”: 3D vitualization tool in broser

Potree is 3D Point Cloud Viewer tools in broser using javascript.

Potree is using octree database.

3.”GitPage”: Web service

GitPage is Github Webservice. GitPage can use javascript include potree.

RtabMap

RTAB-Map (Real-Time Appearance-Based Mapping)
is a RGB-D Graph-Based SLAM .

This Software won the ”IROS 2014 Kinect Challenge”.

Feature :

- The loop closure detector uses a bag-of-words approach.
- This software can be used stand-alone with a hand-held Kinect or RGBD Camera.
- Of course, this corresponds to ROS

See below for details

http://introlab.github.io/rtabmap/

RtabMap Install

Environment：

-OS: Ubuntu1604 or Ubuntu1404

（You can use in the Mac or Windows without ROS）

-ROS: kinetic Kame or indigo

(I do not confirm others, probably it will move.)

-Device: Kinect version 1

（I use freenect driver）

Install : We can install by just this.

ROS kinetic Kame:

```
$ sudo apt-get install ros-kinetic-freenect-launch
$ sudo apt-get install ros-kinetic-rtabmap-ros
```

ROS indigo:

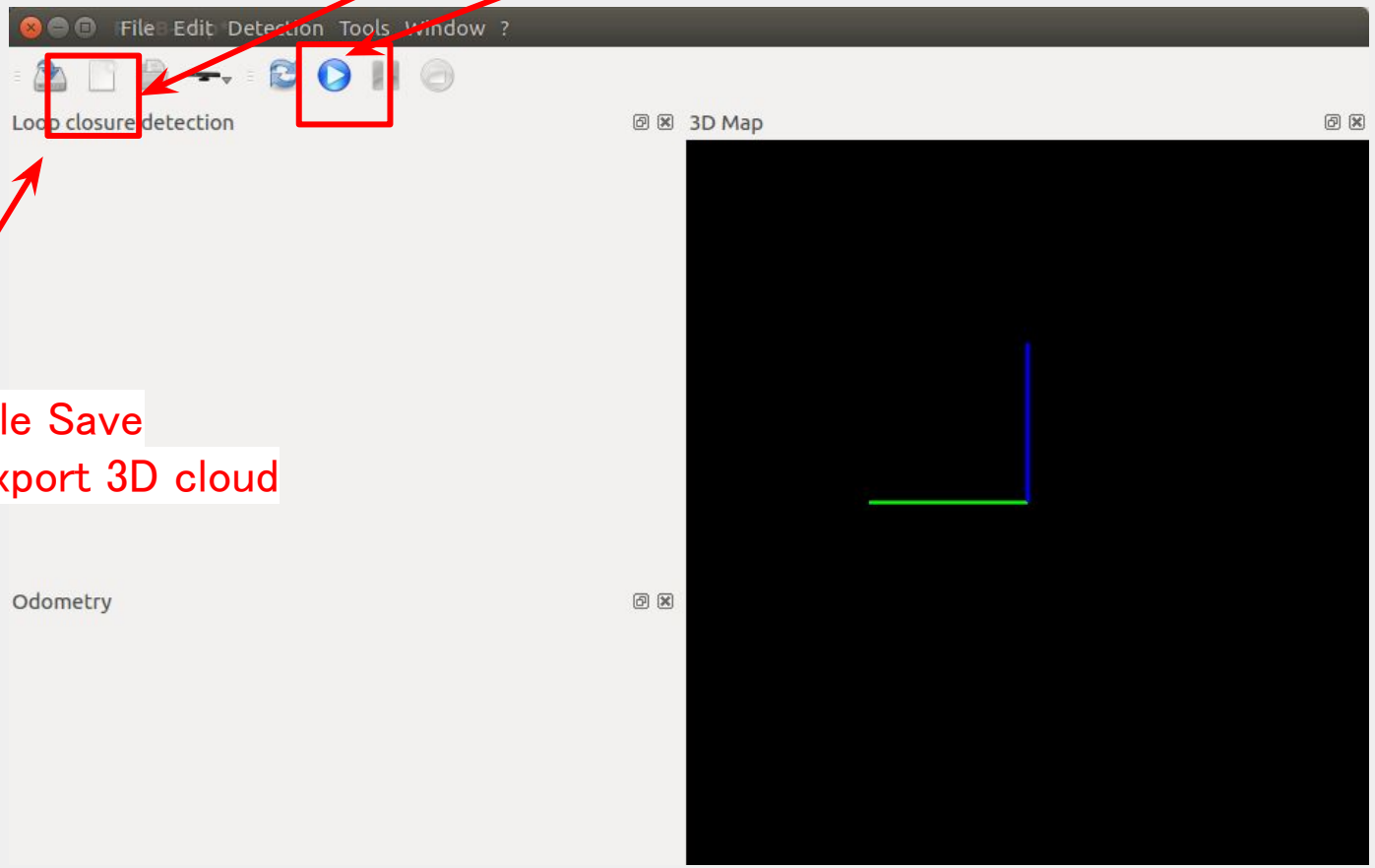
```
$ sudo apt-get install ros-indigo-freenect-launch
$ sudo apt-get install ros-indigo-rtabmap-ros
```

RtabMap Operation

It starts with this.

$ rtabmap

①New DataBase
②Start



③ply File Save
File→Export 3D cloud

RtabMap Operation

Introduce a Video

I prepared a video

RtabMap

Potree

Potree is include two tools

-Potree

Potree is HTML and javascript files.

https://github.com/potree/potree

-Potree 1.3 Install

```
$ wget https://github.com/potree/potree/archive/1.3.zip
$ unzip potree-1.3.zip
```

-PotreeConverter

Builds a Potree file-format from 3D Point Cloud files.

https://github.com/potree/PotreeConverter

RtabMap

Potree

-PotreeConverter Install

Please execute this command

lastools

```
$ cd ~/dev/workspaces/lastools
$ git clone https://github.com/m-schuetz/LAStools.git master
$ cd master/LASzip
$ mkdir build
$ cd build
$ cmake -DCMAKE_BUILD_TYPE=Release ..
$ make
$ sudo make install
```

PotreeConverter

```
$ cd ~/dev/workspaces/PotreeConverter
$ git clone https://github.com/potree/PotreeConverter.git master
$ cd master
$ mkdir build
$ cd build
$ cmake -DCMAKE_BUILD_TYPE=Release -DLASZIP_INCLUDE_DIRS=~/dev/workspaces/lastools/master/LASzip/dll
        -DLASZIP_LIBRARY=~/dev/workspaces/lastools/master/LASzip/build/src/liblaszip.so ..
$ make
$ sudo make install
```

-PotreeConverter converts ply to potree.

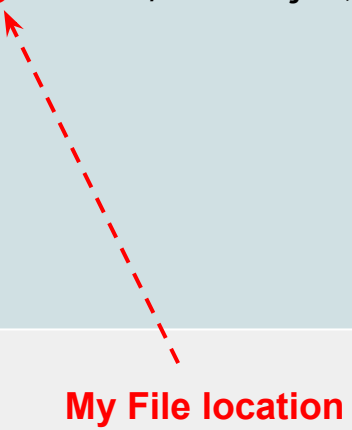
```
$ PotreeConverter cloud.ply -o /home/potree --generate-page pageName
```

RtabMap → Potree

-HTML File edit

```
$emacs ./potree-1.3/examples/lion.html
```

```
84  var sceneProperties = {
85   path:                  "../resources/pointclouds/pageName/cloud.js",
86   cameraPosition: null,
87   cameraTarget: null,
88   sizeType:              "Adaptive",
89   quality:          "Interpolation",
```



RtabMap Potree **GitPage**

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner: nnn112358 / Repository name: Page

Great repository names are short and memorable. Need inspiration? How about **ubiquitous-barnacle**.

Description (optional)

- **Public** — Anyone can see this repository. You choose who can commit.
- **Private** — You choose who can see and commit to this repository.

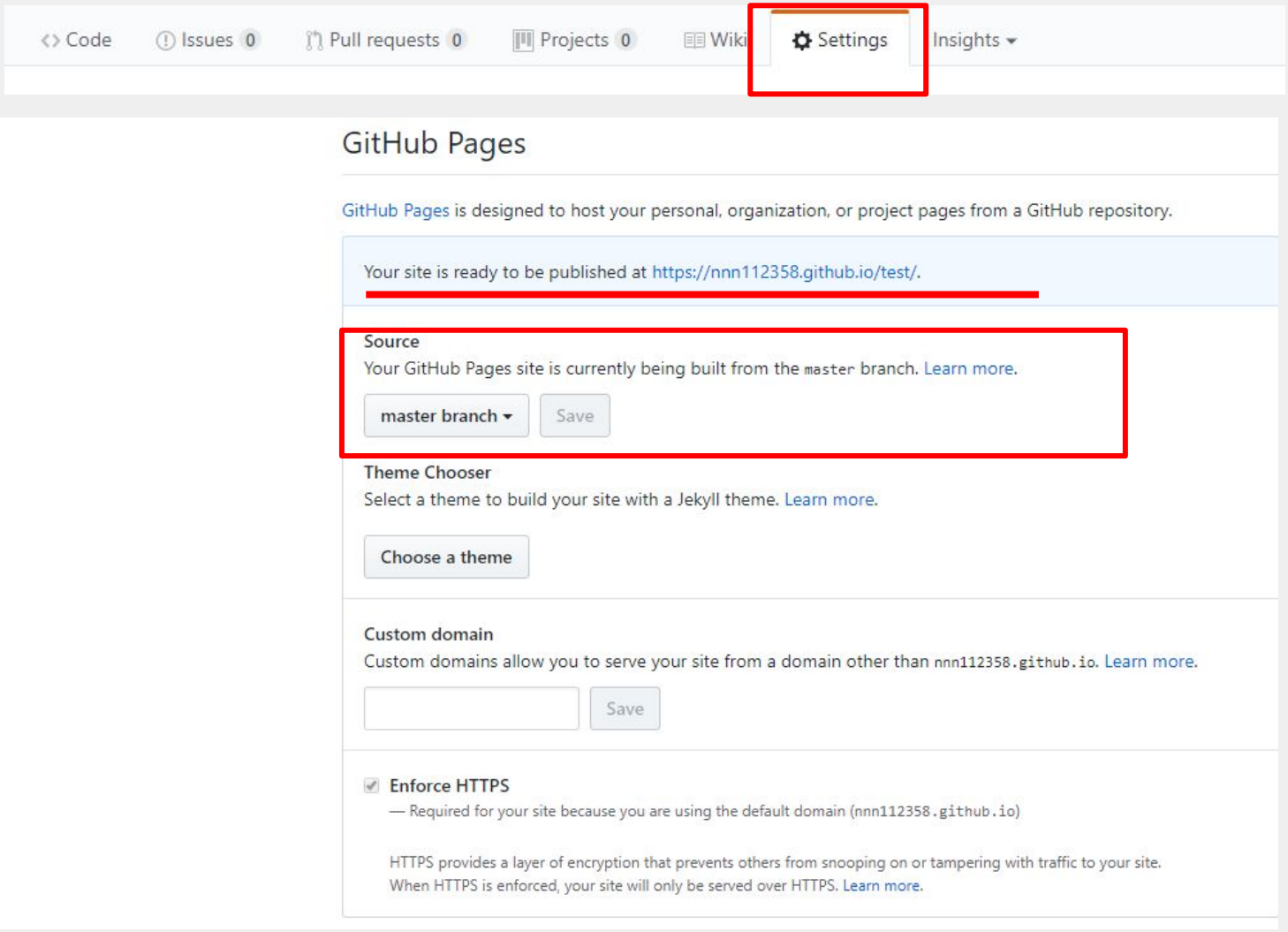
- [x] **Initialize this repository with a README**

This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: None | Add a license: None

Create repository

RtabMap → Potree → GitPage

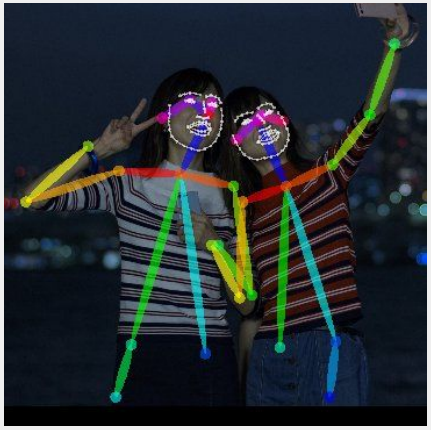


Conclusion

SLAM 3D-Map Visualization in Broser
= RtabMap+Potree+GitPage

Let's make a cool Web site with this tools.

Thank you for listening.



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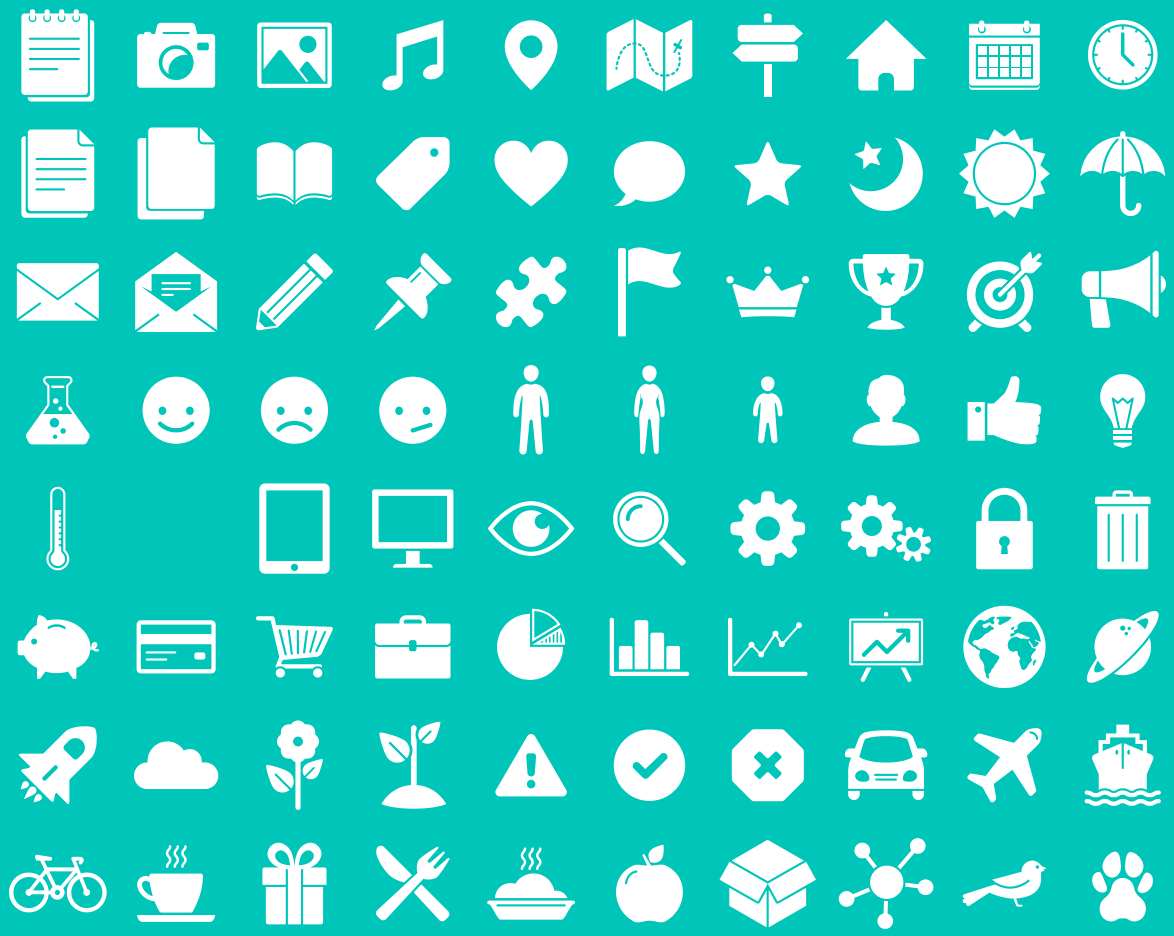
History
- ROS Japan UG #10「OpenPose de ROS」
- ROS Japan UG #11「シミュレーションでSLAMを試す」

Recently ,I made Maker's Commminuty "Ano Lab"
with my friends.

We want to make amazing robots,
and surprise everyone.
Follow me on Twitter , and wait for completion !!

@anoken2017



SlidesCarnival icons are editable shapes.

This means that you can:

- Resize them without losing quality.
- Change fill color and opacity.
- Change line color, width and style.

Isn’t that nice? :)

Examples: