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SPBR
(Stochastic Point-based Renderer)
Installation manual

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0. What is SPBR?

SPBR is a software application, in which we have implemented
our stochastic pointe-based rendering method.
SPBR enables quick and precise 3D see-through (transparent)
visualization of large-scale point clouds.

You can dawnload SPBR from the following GITHub site:
https://github.com/stanakarits/SPBR

For details on the rendering method, see the following
reference published by ourselves:

S. Tanaka, K. Hasegawa, N. Okamoto, R. Umegaki,
S. Wang, M. Uemura, A. Okamoto, and K. Koyamada,
"See-Through Imaging of Laser-scanned 3D Cultural Heritage
Objects based on Stochastic Rendering of Large-Scale
Point Clouds",
ISPRS Ann. Photogramm. Remote Sens. Spatial Inf. Sci.,
III-5, 73-80, doi:10.5194/isprs-annals-III-5-73-2016, 2016
(Proc. XXIII ISPRS Congress, July 12-19, 2016, Prague, Czech;
full paper accepted for oral presentation)

1. How to set up environments for installing SPBR

You need to install GLEW and KVS (Kyoto Visualization System) before
installing SPBR. You can download them from the following Web sites.

GLEW: http://glew.sourceforge.net
KVS : https://github.com/naohisas/KVS

Note: Install GLEW first and then install KVS.

2. How to build, install, test (and uninstall) SPBR

(0) Go to the directory spbr_VERSION/, which is created when decompressing spbr_VERSION.tgz:
Example)

```
$ cd spbr_VERSION/
("$" means the command prompt of your terminal application.)
```

(1) Edit macro "INSTALL_DIR" in Makefile, if necessary.
The default value is $(HOME)/local/bin:

```
INSTALL_DIR=$(HOME)/local/bin
```

where $(HOME) indicates your home directory.

You must also create the installation directory by yourself.
Example)

```
$ mkdir ~/local
$ mkdir ~/local/bin
```

The two SPBR executable files (see (2)) will be installed into the directory specified by the macro.
The command path should be set to the directory properly (Edit ".bashrc", ".cshrc", etc in your home directory).

(2) Build:

```
$ make clean
$ make
```

This builds the following two executable files:

```
spbr: stochastic point-based renderer (transparent rendering)
opbr: opaque point-based renderer (opaque rendering)
```

(3) Install:

```
$ make install
```

This copies the built executable files, "spbr" and "opbr", into the directory by macro "INSTALL_DIR" (see (1) above).

Note:
Executing (2) + (3) is equivalent to "make autoinstall".

3. Test

```
USAGE : spbr file1.spbr file2.spbr ...
```

```
  $ spbr  ./SPBR_DATA/bunny05M.spbr
  $ spbr  ./SPBR_DATA/bunny05Mbin.spbr
  $ spbr  ./SPBR_DATA/bunny100k.spbr  ./SPBR_DATA/
bunny100k_shift.spbr
  $ spbr  ./SPBR_DATA/bunny100kbin.spbr  ./SPBR_DATA/
bunny100kbin_shift.spbr

  $ opbr  ./SPBR_DATA/bunny05M.spbr
  $ opbr  ./SPBR_DATA/bunny05Mbin.spbr
  $ opbr  ./SPBR_DATA/bunny100k.spbr  ./SPBR_DATA/
bunny100k_shift.spbr
  $ opbr  ./SPBR_DATA/bunny100kbin.spbr  ./SPBR_DATA/
bunny100kbin_shift.spbr

 KEYBOARD MENU:
  o-key: object control, l-key: light control
  s-key: snapshot image (BMP)
  S-key: snapshot image (PPM)
  G-key: snapshot image (PGM)
  q-key: quit


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3. Help
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 The SPBR commands and the data format are displayed
 by the "-h" option:

   $ spbr -h  | less
   $ opbr -h  | less

 See also spbr_data_format.txt in this directory.

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4. Uninstallation
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  $ make uninstall


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5. Node added
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* Application "SPBR Converter" (assumed name),
  which can convert PLY files, XYZ files, etc.
  to the SPBR files, shall be made public soon.
  This software will also support conversion from
  an ASCII-format SPBR file to a binary-format SPBR file.
* Temporarily, you can use ../TOOL/CONVERT2BINARY
  to convert an ASCII-format SPBR file to a binary-format
  SPBR file. For details, see ../TOOL/README.txt.
```

```
// end of README.txt
```