Instructions for Building and Installing the Masonry Segmentation Plugins

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v1.3

This document summarises the instructions to follow to build a CloudCompare solution that includes the Masonry Segmentation Plugins. The document is specifically written for building the Masonry Segmentation Plugins v1.3 and later with CloudCompare v2.12.

The plugins have been developed by the Cyberbuild Lab team as part of a series of research projects funded by Historic Environment Scotland.

1 Pre-requisites for Windows

- CloudCompare v2.12 source code, which can be obtained at the CloudCompare's GitHub repository.
- Masonry Segmentation Plugins v1.3 source code, which can be obtained at the Masonry Segmentation Plugins' GitHub repository.
- Qt installed on the computer (version 5.12.2 has been tested) .
- CMake installed on the computer (version 3.16 has been tested) .
- PCL installed on the computer (v1.9.1 prebuilt libraries have been tested) .
- OpenCV installed on the computer (v4.1.0 has been tested) .
- C++11 compliant compiler installed on the computer (MSVC 2017 has been tested) .

Check that PCL, Qt and OpenCV are all 32 or 64 bits according to users' requirements.

2 Generating the CloudCompare project

- Copy the Masonry Segmentation Plugins source code to `C:\CloudCompare\plugins\private`, where `C:\CloudCompare\trunk\` is the path to the CloudCompare source code.

  Note that this path can be different on your computer, but we recommend that the source code be included in a `trunk` sub-folder. If the `private` sub-folder doesn't already exist, just create it manually.

- In CMake
  - Where is the source code: `C:\CloudCompare\trunk`
  - Where to build the binaries: `C:\CloudCompare\build`
  - Click on *Configure* to configure the project:
    * Select generator
    * Select platform (i.e. 32/64 bit)
    * Click on *Finish*

    The configuration should be successful.
  - Modify the value of `CMAKE_INSTALL_PREFIX`, since Windows 7/8/10 has no permissions to write on `Program Files`. A valid option is the folder where the source code has been copied (i.e. `C:\CloudCompare`).
  - Inside the group INSTALL, check `INSTALL_QMANUAL_SEG_PLUGIN` and `INSTALL_QAUTO_SEG_PLUGIN`. This will include the masonry segmentation plugins into the CloudCompare solution.
  - In the group OPTION, you can deselect all options, or keep the ones you wish to keep.
  - Inside the group PLUGIN, select all the CloudCompage core plugins you would like to install in addition to `PLUGIN_IO_QCORE`, such as `PLUGIN_IO_QE57`.
  - Click on *Configure* again.
  - Some errors will likely appear related to dependencies to the above Plugins and Options, e.g. OpenCV, PCL (and related) OpenNI. Note that the Xerces library is required by the E57 library.

    Provide all the necessary paths.
  - Click on *Configure* again, until no errors are shown and the message 'Configuring done' appears in the log window.
  - Generate the project (Click on *Generate*)
  - Open the project (Click on *Open project*). This will open the project in the predefined IDE.

3 Compile the CloudCompare project

In MSVC

- For both `debug` and `release` modes
  - Build `ALL_BUILD` project
  - 'Build only' `INSTALL` project
- In `debug` mode
  - In ALL_BUILD>Properties>Debugging>Command, replace with the path `C:\CloudCompare\CloudCompare_debug\CloudCompare.exe`
- In `release` mode
  - In ALL_BUILD>Properties>Debugging>Command, replace with the path `C:\CloudCompare\CloudCompare\CloudCompare.exe`