ifm syntron

PMDSDK2 O3D3xx plugin

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1. Introduction

There are several possible approaches of configuring and receiving data from the O3D camera. This tool provides a fast guidance into the tools and documents that help integration the O3D camera into industrial applications.

Vision Assistant

- ..\ifmVisionAssistant\ifmVisionAssistant.exe
- The Vision Assistant allows you to configure the camera and to visualise the camera data. It is advised to use the Vision Assistant for the first steps.

Programming manual

- ../documentation/O3D3xx_programming_manual_706395_UK_preliminary.pdf
- This document describes the functionalities of the GUI VisionAssistant and the programming interfaces

XML-RPC and PCIC

- The camera provides two interfaces for communication. XML-RPC is used for configuring the device and image data is received by the PCIC interface. These interfaces can be accessed any programming or scripting language that provide simple TCP/IP socket connections and an XML-RPC client.
- A detailed description of the XML-RPC object structure, functions, PCIC-commands and PCIC data layout can be found in the O3D3xx_Operations_Manual_Preliminary.pdf

- **PMDSDK2**
  - The PMDSDK2 provides a C++ library interface to the camera configuration and data acquisition. The libraries will have to be build from scratch depending on your development environment.

    The chapter How to setup you VisualStudio environment 1 describes how to setup Visual Studio for building the PMDSDK2 plugins for this camera. As this library also uses the XML-RPC and PCIC interface, you may take a look at the following source code how the interfaces are used.

    - Example for XML-RPC communication
      code\source_plugin\src\o3d3xx_camera.cpp
      O3d3xxCameraOperations::connectToCamera
    - Example for receiving data
      code\source_plugin\src\o3d3xx_camera.cpp
      O3d3xxCameraOperations::updateCameraFrame
      O3d3xxCameraOperations::connecttoPCIC
    - Parsing the incoming data
      code\processing_plugin\src\o3d3xxProc.cpp
      parseFrameData

3rd party libraries

- The camera interfaces have been programmed against within two 3rd party open source projects. You may use these sources on your own risk, no support by ifm can be offered in any case of problems occurring.
- **OpenCV and PCL library libo3d3xx**
  - https://github.com/lovepark/libo3d3xx
  - http://pointclouds.org/
  - http://opencv.org/
- **ROS wrapper o3d3xx-ros for libo3d3xx**
  - https://github.com/lovepark/o3d3xx-ros
  - http://www.ros.org/

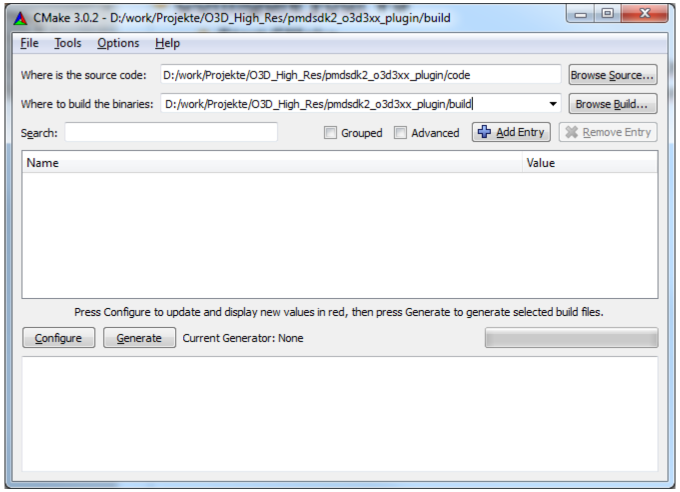
2. Content of SDK

- PMDSDK2 manual for O3D3xx
  - docs\O3D3xxCamera_PMD_SDK_Manual_ifm.pdf
- Source code
  - Introduction for building the PMDSDK2 plugin
    code\README.TXT
  - Implementation of data processing function for PMDSDK2 plugin
    code\processing_plugin
  - Implementation of camera interfaces for PMDSDK2 plugin
    code\source_plugin
  - Unit tests for PMDSDK2 plugin
    code\tests
  - Usage example of source plugin
    code\samples

- Visualization tool for the PMDSDK2 O3D3xx plugin: LightVis tools\lightvis
- binaries\LightVis
  - Ready to use visualization tool, camera has to have the IP 192.168.0.69
- binaries\Plugins
  - Precompiled PMDSDK2 plugins with Visual Studio 2008
- binaries\PMDSDK
  - Binaries and header files for the PMDSDK2

3. How to setup you Visual Studio environment 1

- **Extract the pmdsdk2_o3d3xx_plugin**
- **Install CMake 3.0.2 or higher**
  - http://cmake.org/cmake/resources/software.html
- **Configure your VS**
  - **Start CMake**
  - **Add the source folder and build directory to Cmake**
    build directory has to be in the same folder level as the source folder



CMake 3.0.2 - D:/work/Projekte/O3D_High_Res/pmdsdk2_o3d3xx_plugin/build

Where is the source code: D:/work/Projekte/O3D_High_Res/pmdsdk2_o3d3xx_plugin/code

Where to build the binaries: D:/work/Projekte/O3D_High_Res/pmdsdk2_o3d3xx_plugin/build

Search:

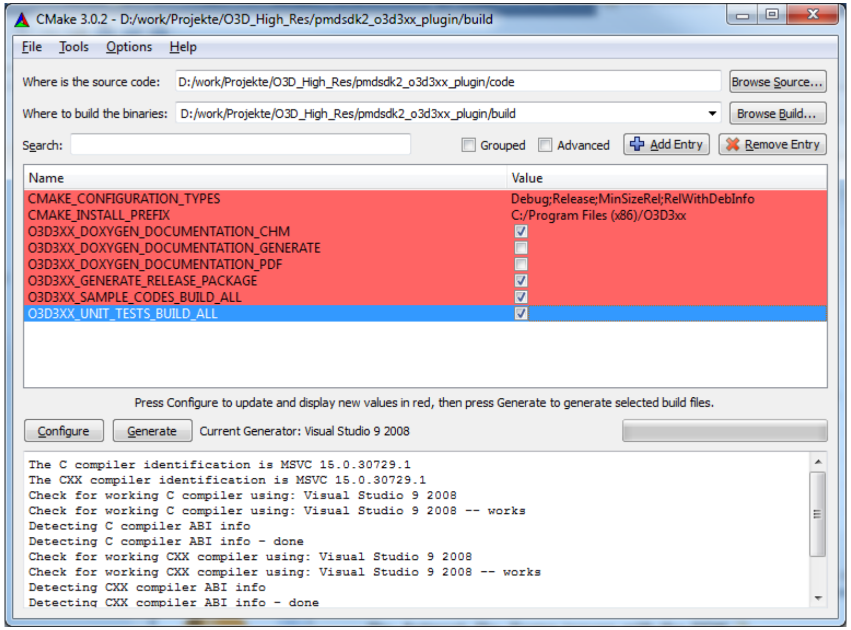
□ Grouped □ Advanced

Press Configure to update and display new values in red, then press Generate to generate selected build files.

Current Generator: None

Configure your VS

- In CMake press „configure“
- Select your VS version (supported are VS 9,10,11,12)
- Make the following selection



CMake 3.0.2 - D:/work/Projekte/O3D_High_Res/pmdsdk2_o3d3xx_plugin/build

Where is the source code: D:/work/Projekte/O3D_High_Res/pmdsdk2_o3d3xx_plugin/code

Where to build the binaries: D:/work/Projekte/O3D_High_Res/pmdsdk2_o3d3xx_plugin/build

Name	Value
CMAKE_CONFIGURATION_TYPES	Debug;Release;MinSizeRel;RelWithDebInfo
CMAKE_INSTALL_PREFIX	C:/Program Files (x86)/O3D3xx
O3D3XX_DOXYGEN_DOCUMENTATION_CHM	☑
O3D3XX_DOXYGEN_DOCUMENTATION_GENERATE	☐
O3D3XX_DOXYGEN_DOCUMENTATION_PDF	☐
O3D3XX_GENERATE_RELEASE_PACKAGE	☑
O3D3XX_SAMPLE_CODES_BUILD_ALL	☑
O3D3XX_UNIT_TESTS_BUILD_ALL	☑

Press Configure to update and display new values in red, then press Generate to generate selected build files.

Current Generator: Visual Studio 9 2008

```
The C compiler identification is MSVC 15.0.30729.1
The CXX compiler identification is MSVC 15.0.30729.1
Check for working C compiler using: Visual Studio 9 2008
Check for working C compiler using: Visual Studio 9 2008 -- works
Detecting C compiler ABI info
Detecting C compiler ABI info - done
Check for working CXX compiler using: Visual Studio 9 2008
Check for working CXX compiler using: Visual Studio 9 2008 -- works
Detecting CXX compiler ABI info
Detecting CXX compiler ABI info - done
```

- Press „generate“

- **Compiling the project**
  - **Go to the build folder and open your VS project file**
  - **Build the whole project in Release configuration**
  - **The file generated are at:**
    bin\Release\Plugins
    - The files:
      O3D3xxCamera.W32.pap
      O3D3xxProc.W32.ppp
      are Dll-files

- **Now you can start LightVis as a visualization example**
  - bin\Release\LightVis\LightVis.exe