Kinect

device

/etc/udev/rules.d/90-kinect2.rules

```
# ATTR{product}=="Kinect2"
SUBSYSTEM=="usb", ATTR{idVendor}=="045e", ATTR{idProduct}=="02c4",
MODE="0666"
SUBSYSTEM=="usb", ATTR{idVendor}=="045e", ATTR{idProduct}=="02d8",
MODE="0666"
SUBSYSTEM=="usb", ATTR{idVendor}=="045e", ATTR{idProduct}=="02d9",
MODE="0666"
```

```
sudo udevadm control --reload
```

On Ubuntu avoid autosuspend of USB. Add usbcore.autosuspend=-1 to grub options

```
# check with
grep . /sys/bus/usb/devices/*/power/autosuspend
```

To connect kinect I have to use proper USB 3.0 chipset like this

```
USB controller: Renesas Technology Corp. uPD720201 USB 3.0 Host Controller
```

OpenCL

```
sudo apt-get install beignet beignet-dev opencl-headers
```

libfreenect2 for CUDA

- ...leggi

```
git clone https://github.com/xlz/libfreenect2.git
sudo apt-get install -y build-essential libturbojpeg libtool autoconf
libudev-dev cmake mesa-common-dev freeglut3-dev libxrandr-dev doxygen libxi-
dev libjpeg-turbo8-dev
cd libfreenect2/depends
cp -r $path_of_gstjpeg_src/nv_headers .
sh install_ubuntu.sh
sudo ln -s /usr/lib/arm-linux-gnueabihf/libturbojpeg.so.0.0.0 /usr/lib/arm-
linux-gnueabihf/libturbojpeg.so
cd ../examples/protonect/
mkdir build && cd build
```

```
cmake ..
make
../bin/Protonect
```

MAX_ISO_BUFFER_LENGTH in usbfs.h caused issues. In the published version, the size is 49152 * 128, the mPCIe card/Jetson didn't like that, but works when the size is **49152**.

libfreenect2

```
cd /lab/kinect
sudo apt-get install -y build-essential libturbojpeg libtool autoconf
libudev-dev cmake \
  freeglut3-dev libxrandr-dev doxygen libxi-dev libopencv-dev
sudo ln -s /usr/lib/x86_64-linux-gnu/libturbojpeg.so.0 /usr/lib/x86_64-
linux-gnu/libturbojpeg.so
git clone https://github.com/OpenKinect/libfreenect2

cd libfreenect2/depends
./install_ubuntu.sh
cd ../examples/protonect
cmake  -DENABLE_CXX11=ON
make && sudo make install
```

Patch to avoid black screen

```
For example in Protonect.cpp:

add an include after line 37

#include <libfreenect2/packet_pipeline.h>

change line 61 from

libfreenect2::Freenect2Device *dev = freenect2.openDefaultDevice();

to

libfreenect2::Freenect2Device *dev = freenect2.openDefaultDevice(new
libfreenect2::CpuPacketPipeline());
```

References

- http://www.morethantechnical.com/2012/12/07/resampling-smoothing-and-interest-points-of-curves-via-css-in-opencv-w-code/
- http://tiku.io/questions/1242558/matplotlib-contour-from-xyz-data-griddata-invalid-index

ROS

Ubuntu 14.04

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu trusty main" > /etc/apt/sources.list.d/ros-latest.list'
wget https://raw.githubusercontent.com/ros/rosdistro/master/ros.key -O - | sudo apt-key add -
sudo apt-get update
```

```
sudo apt-get install ros-indigo-desktop-full
```

initialization

```
sudo rosdep init
rosdep update
```

activate on working shell

```
echo "source /opt/ros/indigo/setup.bash" >> ~/.bashrc
source ~/.bashrc
```

create workspace

```
mkdir -p /lab/catkin_ws/src
cd /lab/catkin_ws/src
catkin_init_workspace
cd ..
catkin_make
```

iai_kinect2

```
cd /lab/catkin_ws/src
git clone https://github.com/code-iai/iai_kinect2.git
cd iai_kinect2
rosdep install -r --from-paths .
cd /lab/catkin_ws
catkin_make -DCMAKE_BUILD_TYPE="Release"
```