

# Laboration 2: ASUS Xtion Pro: Calibration, noise characterization and filtering

Sensors and Sensing

Michael Floßmann, Anders Wilkström

2015–12–07

## 1 Introduction: Structured light cameras

Structured light cameras are a low-cost option for depth measuring in three dimensional space. The cameras project a known light pattern to a scene and record the reflection of that light pattern. This recorded data is then used for triangulation.

For this lab, the ASUS Xtion Pro sensor was used as a structured light camera.

## 2 Task and implementation

The task at hand was to set up and calibrating the sensor, as well as to characterize the noise in the depth measurement and to set up filtering routines.

### 2.1 Basic setup

To set up the camera, the package `openni2` for `ros-indigo` was used. When launching the node `openni2.launch`, it publishes a wide range of topics from the camera.

For this laboration, only the topics which publish a viewable image were of interest. This included two main topics:

- `/camera/rgb/`  
This topic publishes data from the RGB camera on the ASUS Xtion Pro. The topic `/camera/rgb/raw` shows the unprocessed RGB image like a regular camera. A sample image from this topic is shown in figure
- `/camera/depth/`  
This topic publishes the depth data as a 2D-array of float variables with the depth values in meters.



Figure 1: Output image of `/camera/rgb/raw`