# Kinect ROS driver

1. This guide demonstrates how to install the freenect driver for Kinect on Ubuntu 14.04. We can use this driver to record a dataset that can be utilised as input for the RGB-D SLAM algorithm. Also, I describe how to install the freenect driver on the Erle-Brain. However, there are still some issues with this process which I will illustrate later in this document.

## Installation on Ubuntu 14.04

* 1. Installing the freenect ROS driver on Ubuntu is an easy process. Just install two packages:
  + ***sudo apt-get install libfreenect-dev***
  + ***sudo apt-get install ros-indigo-freenect-launch***

## Installation on Erle-Brain

* 1. However, installing these drivers on the Erle-Brain is not as straightforward. The freenect

launch package and its dependencies have to be installed in a different way, as I will explain below. The Erle-Brain 3 is a Raspberry Pi 3. Therefore I based the installation process for freenect

on chapter 4.2 at <http://wiki.ros.org/ROSberryPi/Installing ROS Kinetic on the Raspberry Pi>

* + First power the Erle-Copter and connect your laptop to the erlerobotics WiFi. Make sure that the Erle-Copter has an internet connection via its ethernet port.
  + Connect to the Erle-Copter via SSH. In the folder '/*Tech report/Code/Shell scripts'* in this portfolio, I included the ***erle\_ssh.sh*** script that does this. The login for the Erle-Copter is '*erle'*, and the password is *'holaerle'*.
  + Before installing the freenect package itself, all required dependencies have to be installed. For this purpose, generated rosinstall files. This is done by executing:   
     ***rosinstall generator <package> --rosdistro kinetic --deps –wet-only --tar > <package>.rosinstall***where ”package” is the dependency that has to be installed. The freenect\_launch package and its recursive dependencies for which I generated rosinstall files are listed below:
    - * freenect\_launch
      * rgbd\_launch
      * smclib *(dependency of 'bond')*
      * bond *(dependency of 'nodelet')*
      * bondcpp *(dependency of 'nodelet')*
      * nodelet
      * image\_proc
      * libfreenect
      * freenect\_camera

For example, to create a rosinstall file for **nodelet**, go to the catkin workspace and execute:  
 ***rosinstall generator nodelet --rosdistro kinetic --deps –wet-only --tar > nodelet.rosinstall***

* + Then, the **src** folder in the catkin workspace has te be initialised for rosinstall files:  
     ***wstool init src***
  + In order to import the rosinstall files in the **src** folder, execute the commond below for every rosinstall:  
     ***wstool merge -t src <package>***
  + When this is done, the **src** folder has to be updated:  
     ***wstool update -t src***  
    If this command renders errors, just try to execute it again.
  + Now, the catkin workspace can be built. Execute the command below for every package, in the order listed above.  
     ***catkin\_make\_isolated --pkg <package> --install***If the libfreenect package can not be built, try to execute  
     ***sudo apt-get install libxmu-dev libxi-dev***

This is where my dependency problems started. When trying to launch the freenect driver on the Erle-Copter (using ***roslaunch freenect\_launch freenect.launch***), I get a lot of errors about the **depth\_image\_proc** package which we did not include in the rosinstalls. Building this package by using the method above is not possible, as it requires computational resources that the Erle-Brain can not provide. Therefore, the **depth\_image\_proc** package has to be cross-compiled for ARM on your laptop and then copied to the Erle-Brain via SCP.

I did not manage succesfully finish the cross-compilation of **depth\_image\_proc.** As a result, datasets for RGB-D SLAM can not be recorded via the Erle-Brain. For now, I use the freenect driver on my laptop.