

Master 2016

Tejas Ahobala

Wireless Sensor Node Software/Hardware Design with user friendly GUI based on Qt for the International Space Station Experiment.

ABSTRACT - Masterthesis

The development of the Wireless Sensor Node for the International Space Station was started in 2014: The network utilizes the DLR magnetic field experiment MagVector/MFX infrastructure to power and control the access point connected via the USB port.

The main purpose of the experiment is to place small sensor node to operate and collect the information about the environmental conditions in the Columbus Laboratory. The first version of the sensor node consists of several smart sensors and it communicates with the access point via radio frequency (RF).

The most important goal is to warn the crews/astronauts against potential threats. The sensor nodes can detect liquid leakage in ISS by using the humidity sensor, or detect the heat source by infrared light sensor and other mechanical events with the acceleration sensor.

The idea to use infrared technology for the wireless communication is due to the fact that the electromagnetic interference with the electronics inside the Columbus module shall be minimized. The infrared light transmission is also quite harmless for human health if it does not exceed the limit used in the home appliances nowadays. The measured sensor data sent back to the earth, which is analyzed by the scientists could also be presented to the audience such as students to increase the awareness of the younger generation by making it available for them on the internet or on their smart phones.