

BACHELORTHESIS/ MASTERTHESIS

Topic:

Radar imaging demonstrator

Motivation and Goal:

With radar sensors not only distance and velocity measurements can be conducted, but many kinds of imaging are possible as well. While the range and velocity estimation can be demonstrated easily, a concise demonstrator for different kinds of radar-based imaging is yet required.

For practical imaging, either the radar sensor or the observed object must be moved and rotated. A preexisting actuator unit (see Figure 1) is already present and linear motion and rotation can be controlled via Python.

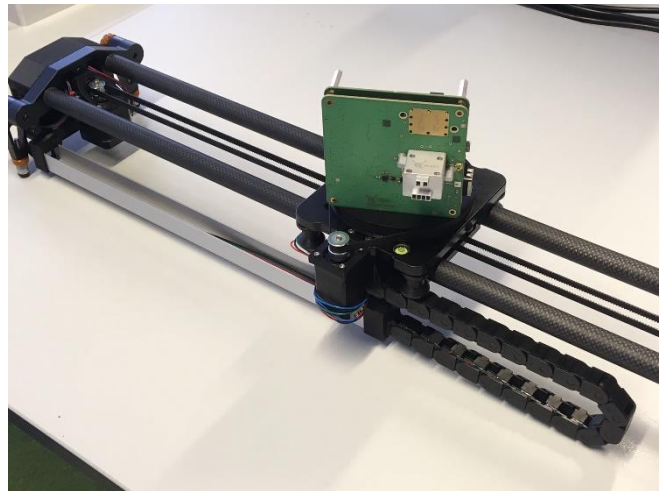


Figure 1 Rader Sensor mounted on actuator unit

The goal of this work is to use the preexisting actuator unit and preexisting radar sensors to set-up an imaging demonstration suitable for common types of radar measurements like synthetic aperture radar (SAR), object reconstruction via Radon Transform, 3D image reconstruction via tomography, ...

The main task in this work is to learn about the different types of radar imaging, conduct measurements, and implement the corresponding signal processing algorithms in Python.

This topic is suitable for bachelor and master thesis, depending on which imaging algorithms to work with.

Start: any time (as of 01/2021)

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