
Abstract

This thesis presents an approach for non-contact human vital parameter monitoring using a 24 GHz Doppler radar system. Doppler radar systems are able to detect small displacements in distances up to several meters. The basic principle of a Doppler radar system is that it emits electromagnetic radiation, the emitted radiation is reflected by a target and received again by the radar as an echo. In case of a non-static target the displacement cause modulations in the received signals. These modulations are measured and analysed.

A theoretical approach is provided about the fundamentals of Doppler radar systems and how the radar signals are processed.

The experiments are performed with a 24 GHz Doppler radar system. A software algorithm for data acquisition and signal processing is developed. It will also be shown that with little expenditure good results can be achieved. For testing purpose, an experimental setup is designed for simulating the human heart beat and respiratory rate.