Hochschule Ostwestfalen-Lippe
University of Applied Sciences

Institut für industrielle Informationstechnik

Fachbereich Elektrotechnik und Technische Informatik
Department of Electrical Engineering and Computer Science

Project Work, Master
Sepideh Ghorbanloo

Implementation and Evaluation of Fuzzy Logic Based Signal Classification for Standard Wireless Technologies

Abstract

This report presents a Neuro Fuzzy Signal Classifier (NFSC) in order to identify primary user (PU) signals in coexisting environments. The NFSC uses bandwidth, operating frequency, pulse shape, hopping behavior and time behavior of the signals as distinct features to classify the PU signals. The MSP430 microcontroller and CC2500 transceiver from Texas Instruments are used for the implementation.

The evaluation focus mainly on timing issues, i.e. the channel switching delay and the input detection delay. The performance of the NFSC for IEEE 802.11g detection and classification is evaluated in two different scenarios, high load IEEE 802.11g and low load IEEE 802.11g.

Examiner: Prof. Dr.-Ing. Uwe Meier