

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

**Master Thesis**  
**Daniel Töws**

## **Implementation and Evaluation of Cognitive Algorithms Applied to a Software Defined Radio Approach**

### **Abstract**

Typically, cognitive radios try to detect and utilize free gaps in the radio environment. Therefore, a solution for detecting primary user systems is highly desirable. A neuro-fuzzy signal classifier could be a solution for this.

In this thesis, a neuro-fuzzy signal classification algorithm was evaluated in a wideband software-defined-radio-based implementation. The evaluation was performed in six heterogeneous and harsh selected industrial scenarios. The classification performance for WLAN and Bluetooth systems with different duty cycles will be shown.

**Examiner: Prof. Dr.-Ing. Uwe Meier**  
**Prof. Dr.-Ing. Stefan Witte**