

## Open Thesis / Project

# Supporting new Platforms in the Wireless Communication Simulator BabbleSim

### Thesis Type

Master Project / Master Thesis

### Motivation

Wireless communication plays a crucial role in today's world. To keep up with the ever-changing demands of the market, new wireless applications or even technologies have to be developed. The development, however, is still a big issue as it is very costly, cumbersome, and time consuming.

In order to improve the development of wireless applications, simulations play a central role. By simulating different environments, situations, or interference patterns, a huge range of different scenarios can quickly be tested in a cost-efficient way. Unfortunately, today's simulations are very restricted in their possibilities. BabbleSim, for example, is an open-source simulator of the physical layer of shared medium networks with focus on Bluetooth Low Energy. Unfortunately, the number of supported hardware platforms (e.g., the Nordic nrf52) that can be used within the simulation is quite limited.

The aim of this thesis/project is to add support for new hardware platforms in BabbleSim. As Android already has decent emulators, one possibility is to use one of these emulators as a starting point to add Android support into BabbleSim. However, this thesis/project is not limited to Android. BabbleSim supports the Zephyr operating system, and thus, adding devices that are already supported by the Zephyr operating system (e.g., the Raspberry Pi, Texas Instruments boards) is also possible.



### Goals and Tasks

Within this context, the student can explore several directions and perform different tasks, such as:

- Research on state-of-the-art wireless network simulations and on simulating hardware;
- Become familiar with BabbleSim and get an overview about supported hardware platforms;
- Adding support for new hardware platforms to BabbleSim such as Android devices or devices supported by the Zephyr operating system.

### Target Group

- Students of ICE/Telematics;
- Students of Computer Science.

### Required Prior Knowledge

- Excellent C programming skills;
- Skills in Android programming / experience with the Zephyr operating system;
- Experience with wireless technologies and simulations is a plus.

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