

# Master Thesis

**Supervisor: Dr.-Ing. Sandro Schulze**  
(sanschul@iti.cs.uni-magdeburg.de)

## Analyzing the Birth, Life, and Death of Bug Reports

**Context:** Nowadays, open-source systems (OSS) play a pivotal role in software development, as they are used even in commercial software. To cope with the increasing demand of software quality, not only version control systems (e.g., GIT) or continuous integration (CI) are commonly used. Also, bug tracking systems are maintained to get rid of as many failures as possible, reported by a vast amount of different stakeholders (developer, user, tester). Over time, this bug databases may get confusing or contains too many bug reports, thus, leaving many of them open.

**Task:** In this thesis, the student has to investigate reasons for bug reports to be open (or closed, respectively). In particular, the student conducts an empirical analysis of a large amount of bug reports from Mozilla, and develop a technique that allows to reason about the birth, life, and death of bug reports (i.e., why they remain open or get closed). To this end, it might be necessary to dig into machine learning or NLP techniques, but in general, a particular degree of freedom how to solve the task is given.

**Why?** Unmaintained bug databases increase the effort for Devs, as they (a) make it hard to detect important bug reports and (b) may lead to unfixed bugs.

### Main Tasks:

- Concept for analyzing bug databases, including techniques for reasoning (and prediction) of bug reports
- Implementation of this concept (for mining the bug reports, 3rd party libraries may be used)
- A critical evaluation of the implemented technique with existing bug databases

### Requirements:

- good programming skills
- quick grasp of subject matter, strong work ethic, work on you on initiative (with guidance by the supervisor)
- background in machine learning or data mining is a plus, but not required (can be obtained during MSc thesis)
- You should be eager, creative, and open-minded to search for smart solutions (that may be not so easy to find)