Bachelor Thesis

« ROFL – RatiOnal FLoat »

Motivation

On sensor nodes, computations with non-integer numbers are usually inefficient and waste a lot of precious space for program code. This is due to floating point computations being implemented in software rather than hardware since the CPUs of sensor nodes usually do not include a floating unit. We propose a promising approach for representing and working with floating point numbers. More information will be given to the applicant in person.

Work description

The student will implement a class, preferably in C++, that implements the new concept for floating point numbers. The aim is to prove the practicability of our approach. Furthermore, an evaluation is expected that compares our approach to the classical software floating point emulation and to verify the sanity in different aspects.

After evaluation, the student might find that the proposed idea is unpromising, this will not have any influence on the overall appreciation of the submitted bachelor thesis.

Requisites

- Basic knowledge in binary number representation (1th Semester)

- Basic knowledge in algebra (7th Grade)

- Basic C/C++ knowledge (1th Semester)

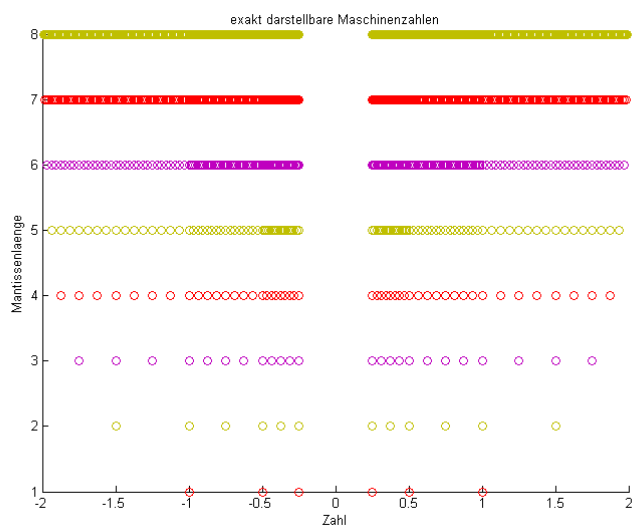- Passion to research and develop new ideas (timeless)

Figure 1: Exact floating point numbers

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