

Peer Review

Review of: "Evaluation of Bfloat16, Posit, and Takum Arithmetics in Sparse Linear Solvers"

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This work evaluates the performance of Bfloat16, Posit, and Takum Arithmetics by testing LU, QR, and GMRES algorithms on sparse matrices. The experimental results show that tapered-precision arithmetic outperforms IEEE 754 floating-point formats in all the tested examples.

The paper is well-written and clear. I have the following comments:

1. The test matrices lack details about their properties, such as size and condition number. Including these properties would make the experiments much clearer.
2. How do the algorithms perform with float16, Posit, and Takum Arithmetics on ill-conditioned matrices? Are there any performance differences between the direct and iterative solvers for these ill-conditioned matrices?
3. Could you discuss the stability of Bfloat16, Posit, and Takum Arithmetics and provide a comparison?
4. It would be helpful to provide a link to the benchmark code.
5. I also have a question which may be out of the scope of this paper: is it possible to combine Bfloat16/Bfloat32 and Takum Arithmetics in an algorithm? Do you think there would be any advantages to doing this?

Declarations

Potential competing interests: No potential competing interests to declare.