

## **ABSTRACT**

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### **SEEKING SUPERLINEARITY WITH THE REDUCTION OF DATA TYPE SIZE**

The need in high performance computing is rising along with the rapid applications development. The only solution to these rapid needs is to migrate into parallel computation which still has lots of potential for becoming the answer to this matter. Speedup is one of the measurements for evaluating the performance of parallel computation. Superlinear speedup (superlinearity) is a type of speedup where the speedup value of the parallel computation is greater than the number of processors being used.

Within this report, it will be presented the attempts to achieve superlinearity by reducing the data type size. The way for reducing the data type size is by using the concept of memory allocation which is implemented in a function called `malloc()` in C programming language, that allow programmer to allocate a certain amount of memory based on need.

Through the research that has been done in this report, the result indicates that superlinearity is achievable by reducing the data type size with the process of finding inverse of a matrix as the test case used in this research. Even so, to achieve superlinearity, there are some conditions to be considered such as the matrix size, the number of processor used, and the data type size used.

Keyword: superlinearity, memory allocation, data type, parallel computing

References: 26 (1988-2013)