Univeristy of Central Florida
4000 Central Florida Blvd
Orlando, FL 32816

January 20, 2015

Dr. Viktor Prasanna
Editor-in-Chief
Journal of Parallel and Distributed Computing

Dear Dr. Prasanna

I am pleased to submit an original research article entitled "Efficient Non-blocking Logarithmic Search Using Multi-dimensional List" for consideration for publication in the *Journal of parallel and Distributed Computing*.

In this manuscript, we introduce the multi-dimensional list (MDList), a novel key-value storage data structure that has logarithmic worst-case search time. Comparing with binary search trees (BSTs) and skiplists, the proposed data structure is highly optimized for concurrent accesses on shared-memory multi-processors. It eliminates the need of rebalancing, which is often the sequential bottleneck impeding concurrent BSTs. It also has excellent locality of reference which minimizes interference among concurrent mutating operations. We implement a lock-free linearizable MDList that conforms to the dictionary abstract data type and evaluate its performance against a number of recent concurrent BSTs and skiplists. Our algorithm provides superior scalability and considerable speedups over the state-of-the-art alternatives.

We believe that this manuscript is appropriate for the publication by JPDC because logarithm search data structures are fundamental building blocks of a large number of applications, and the proposed algorithm would have a broader impact for future performance critical applications on share-memory multiprocessor systems. This manuscript has not been published and is not under consideration for publication elsewhere. We have no conflicts of interest to disclose.

Thank you for your consideration!

Sincerely,

Deli Zhang
Ph.D. Candidate, Department of EECS
University of Central Florida