

NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S S E M I N A R

Title: Keep it Local: Java Runtime Improvements for Manycore Garbage Collection

Speaker: Dr. Jeremy Singer
 School of Computing Science
 University of Glasgow, Scotland

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Chaired by: Dr Tay Yong Chiang, Professor, School of Computing
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Abstract:

Memory access time in modern manycore processors is non-uniform, since the memory is distributed in discrete units across the physical sockets. This is known as non-uniform memory architecture (NUMA). Parallel runtime systems attempt to improve memory access latency by allocating memory closer to the threads that will access that data. The Java virtual machine (JVM) hides NUMA complexity from Java apps. However the JVM does not consider locality when processing objects for garbage collection.

We describe how to take advantage of connected objects to improve garbage collection performance. We evaluate our approach on Java apps and big data workloads. Results show an improvement in GC overhead, with up to 2.5x speedup and 37% better application performance.

Biodata:

Jeremy is a lecturer in the School of Computing Science at the University of Glasgow, Scotland. His main research theme is programming language runtimes, particularly with respect to performance optimization. Jeremy received his PhD from the University of Cambridge in 2006.