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Distinguished Speaker Series

Zhiqiang Ma

Intel Corporation

Improving Performance and Robustness of Intel® Thread Checker

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4 - 5 PM CST

3405 Siebel Center

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Abstract

Concurrency bugs, especially data races, are notorious in parallel software development. They are difficult to reproduce and debug. Automatic bug detection tools are a must-have for parallel software development. Intel® Thread Checker is a powerful tool currently shipped in Intel® Inspector for automatically detecting data races and other multithread programming errors. Because it is a dynamic software tool, it has to instrument the program and watch every memory access and it suffers from high runtime overhead.

On the other hand, Thread Checker runs in the same address space as that of the program under analysis. The bugs in program under analysis can potentially corrupt the data structure in Thread Checker and cause the tool to crash. This can limit the usability of the tool.

We have been working to address both the performance and robustness challenges. In this talk, I will present various techniques already built into the product and techniques currently in research phase for improving the performance and robustness of Thread Checker.

Bio

Zhiqiang Ma is the lead of Intel® Thread Checker team with Software and Services Group of Intel Corporation. He is the lead designer and developer of Intel® Thread Checker. His work and interest mainly focus on parallel program analysis, especially dynamic analysis techniques for concurrency bug detection. He holds 6 USPTO granted patents and a few pending patent applications.



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