

Applications of Lock and Wait-Free shared data structures to Real-Time Systems

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Abstract:

I am a member of the ARTES project called WARPing which has been running since spring 1999. My current research is within real-time operating systems with focus on shared data structures for concurrent programming and their benefits.

I will give an overview of the current research of improving current lock and wait-free algorithms, presenting the different approaches existing. I have studied how using timing information available in real-time systems can be used to improve and simplify wait-free algorithms for shared data structures. This work has resulted in two papers, presented at two major international conferences. The results from experiments and analytical evaluations seem very promising, and show significant improvements and high applicability within real-time systems. Work is currently being performed on how to further develop these ideas into general frameworks.

I am also doing studies and implementation work with known lock- and wait-free data structures. The effort will be focused on applications within real-time systems community, with the aim of incorporating for functionality inside of a commercial operating system. The possible benefits will be examined both on the user application side as well as for internal usage inside of operating system kernels.

WARPing homepage: <http://www.cs.chalmers.se/~phs/warp>