“Making Parallel and Distributed Computing Systems Robust”

by

Professor H. J. Siegel
Abell Endowed Chair Distinguished Professor
Department of Electrical and Computer Engineering
and Department of Computer Science
Director of ISTeC
Colorado State University

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Abstract & Biography

Abstract: In heterogeneous parallel and distributed computing environments, different kinds of machines are interconnected to execute tasks. Computational requirements, such as types of instructions and memory space, may vary among tasks. Also, the execution time of a given task may vary from one machine to another. An important research problem is how to assign tasks to machines to maximize some given performance measure. However, resource assignment decisions and associated performance prediction are often based on estimated values of task and system parameters. The actual values of these parameters, and actual performance, may differ from the estimates. To address this problem, we present two models of robustness for resource assignments. One model is based on having deterministic estimates of these system parameters, and the other assumes that stochastic information is available about the values of these parameters. We demonstrate how these models can be used to evaluate the robustness of resource assignments and to design assignment techniques that are robust.

Biography: H. J. Siegel is the George T. Abell Endowed Chair Distinguished Professor of Electrical and Computer Engineering at Colorado State University (CSU), where he is also a Professor of Computer Science and Director of the university-wide Information Science and Technology Center (ISTeC). From 1976 to 2001, he was a Professor at Purdue University. He received two B.S. degrees from the Massachusetts Institute of Technology (MIT), and the M.A., M.S.E., and Ph.D. degrees from Princeton University. He is a Fellow of the IEEE and a Fellow of the ACM. Prof. Siegel has co-authored over 350 published technical papers in the areas of parallel and distributed computing and communications. He was a Coeditor-in-Chief of the Journal of Parallel and Distributed Computing, and was on the Editorial Boards of the IEEE Transactions on Parallel and Distributed Systems and the IEEE Transactions on Computers.

Please contact Prof. Ross McConnell, rmm@CS.ColoState.edu, with any questions.