Mini-Track on Grid Computing

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The computational grid is an increasingly popular model of wide-area distributed computing. Such a grid may take a variety of forms, from a simple stand-alone collection of but a handful of identical processors, to vast networks with many types of compute engines. It can facilitate collaboration and data sharing. It can be used to capture cycles that would otherwise be wasted. In many high-performance applications, it can even obviate the need for expensive supercomputers. Thus there is a growing interest in building ever more powerful computational grids.

Sharing resources has ever been the slogan of grid computing. A computational grid is best viewed as an environment where different nodes on a net (which could simply be the internet) have a mechanism for sharing resources. This includes the sharing of computational power and databases as well as other devices. For this reason, grid computing is more than just distributed computing. It carries under its wings several different subjects such as parallel computing, cluster computing, and distributed computing in heterogeneous systems.

The Mini-Track on Grid Computing was organized within the Software Technology Track for HICSS-37, January 2004. All submitted papers were run through a stringent reviewing process. Scholars and practitioners from throughout the international community were employed as reviewers. Three papers were accepted for presentation at the conference and also publication in the proceedings.

The paper by Chen, Dongarra, Luzczek and Roche describes a "Self Adapting Numerical Software" system, to be used in a cluster computing environment. The authors present a framework for numerical software able to adapt to changes in the computational resources used or available. The problem addressed is not an easy one. The approach proposed by the authors may be of great utility in providing high levels of quality of service.

An approach for dealing with the problems associated with process/thread migration is provided in the paper by Jiang and Chaudhary. In a grid environment, migration of processes is often difficult, due in large part to machine dependence of compiled codes. This paper describes a package called Migthread, which tries to handle most of the details involved with facilitating process migration in a heterogeneous distributed system.

The paper by Wang, Gross, Carr and Berry describes the parallelization of a model for fish biomass that is being used in Comprehensive Everglades Restoration Program. The authors report on very large savings in computer time achieved by parallelization of the code.

The wide diversity of subjects addressed in these papers highlights the interdisciplinary nature of this emerging field of study.

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