

Class presentations – December 7

Neumann and Thakur

2:02-2:11

Distributed Mandelbrot Computation

The basic idea is that since each point of calculation of the Mand. set is independent, let's let a group of processors do a portion each of the entire area to be calculated. Thus each machine is assigned a region by a host and the results are sent to the host where all the regions are assembled into one glorious ensemble image (yeah!).

The host has a user interface which allows the user to specify the region of interest and the calculation threshold. The goal is to allow a fairly good sized image (256×256) to be manipulated in "real-time," which for us is within a few seconds, *i.e.*, less than hours.

Of interest also is at what point does the network congestion and overhead make adding additional processors pointless? What does the efficiency curve look like? What's the penalty for going "off sub-lan"? Is 42 really the optimal machine number? Does running this at 3:00 AM help?

Barkley and Shan

2:11-2:20

Comms

Comms is a tool that allows users on multiple machines to share a graphics window. From the users' viewpoint, the program operates as a master controlling one or more slave screens. A user passes control explicitly by making a menu selection. The system prevents lockout by passing control round-robin, so that each user gets a chance to control the window. This version allows any participant to terminate the session.

Brown and Hill

2:20-2:29

Located: A Daemon to locate users in the department

Located' is a locate daemon that polls the machines in the department using the RPC command *rusers* to gather information, and stores this information in a database for easy retrieval. Located, combined with it's associated client program *locate*, provides a mechanism for any user to query the location of a user on any Sun, Vax, or uVax in the department.

By typing `locate username`, you will receive a response in about one second, without unnecessary delays or network traffic from rusers packets. Since the polling process queries the machines on a regular basis, the only network load is from the rusers responses. This should obviate the need of any user to use the rusers or rwho commands to find people, thereby potentially reducing total network load.

Fitzgibbon and Rohlf

2:29-2:38

A Fast Fourier Transform Server for the Convex C220

We are implementing a server which will allow users on campus to send two dimensional data to the Convex C220 Supercomputer in Phillips Hall. The server will store this data on disk, perform an FFT on it, multiply it by a filter, or perform an inverse FFT on it. On the client side, the user will see only a set of C++ classes which interface with the

COOL library and hide communications details. The server is being designed so that it can later be extended to three dimensional data, for the use of the biochemistry department.

Dratch, Haskell, Lee, on Skinner

2:38-2:50

Finding users on the UNC Internet

We are working on a system to assist users in finding the electronic address of a specified user within the UNC Internet system. The user gives us a login name/last name and an optional first name/initial and we generate appropriate ping/finger commands to the user-specified and/or program-generated possible computer systems. We receive the results of the ping/finger and report back to the user (either interactively or through a file) the success and/or failure of our attempts in an easily understood manner.