

Facilities, Equipment and Other Resources

Research Facilities in the School of Computer Science (SCS)

Heterogeneous Distributed Computing — The SCS research facility provides numerous and diverse computers for faculty and graduate-student use — more than 3000 machines. All have transparent access to the Andrew File System, a 625Gbyte, shared filespace, and are connected to one another through the Network File System protocol. SCS maintains several terabytes of secondary storage. Beyond these resources, the University provides various independent facilities for general use. Computationally intensive applications can also use PSC computers, including Cray T3E, C90-16/512, and J90 supercomputers.

Experimental Systems — SCS has a reputation for developing innovative computers, devices, networks, and systems that benefit diverse applications. Current large-scale, experimental efforts include the Darwin “application-aware” networking project and the NASD project on storage interfaces with direct device/client communication.

Networking — Carnegie Mellon operates a fully-interconnected, multimedia, multiprotocol campus network. The system incorporates state-of-the-art commercial technology and spans over 100 segments in a “collapsed backbone” infrastructure that enables mutual access among all campus systems, including the PSC supercomputers. To extend the network, the Information Networking Institute, with NSF funding, is developing a wireless infrastructure. Now supporting mobile computing throughout campus, the system will eventually deliver to users’ handheld or laptop computers all the functionality of their desktop machines, on campus or off.

Externally, SCS connects directly to the Internet, through T3 (45Mbit/s) and 10Mbit/s links, the NSF-sponsored vBNS (OC12) network, and the DARPA-sponsored CAIRN and ATM-based AAI (OC3) wide-area experimental networks. Carnegie Mellon is also actively engaged in the Internet-2 and NGI initiatives.

Office Space — Faculty have private offices, while postdoctoral staff and graduate students share office space.

Other — Carnegie Mellon’s School of Computer Science (SCS) is the largest academic organization devoted to the study of computers. Its four degree-granting departments — the Computer Science Department, Robotics Institute, Human-Computer Interaction Institute, and Language Technologies Institute — include over 200 faculty, 300 graduate students, and a 200-member professional technical staff. Two new units, the Center for Automated Learning and Discovery and the Entertainment Technology Center, opened in 1997. SCS also collaborates with other University Research Centers, including the DoD-funded Software Engineering Institute (SEI); the NSF-sponsored Pittsburgh Supercomputing Center (PSC), the Information Networking Institute, and the Institute of Complex Engineered Systems (ICES).

Research Facilities for the Proposed Work

The faculty, staff and students who will perform the proposed work will make use of the existing computational and networking infrastructure. This includes a variety of single-user Unix workstations (Sun, Dec, HP), and PCs running Windows and Linux. These workstations are presently networked via a local Ethernet (10Mbps); during the next 1-2 years the network will be upgraded to 100Mbps service. The hardware requested under this proposal will complement the existing resources by adding fast, high-capacity multi-user Unix servers for computation-intensive tasks specific to the proposed work (such as training statistical models, large scale evaluations, etc.)