FY 2007 Technology Fee Proposal

Submitting Organization:
Major Unit: College of Arts and Sciences
Department: Computer Science

Contact Person: Yi Pan
E-Mail: ypan@cs.gsu.edu
Telephone: 651-0657

1. Project Short Title

5-8 Word Project Title
Maintenance of a Multi-Processor UNIX Computer System

2. Total Requested

Fiscal Year 2007
$20,000

3. Executive Summary

Project Description (three or four sentences)
This proposal requests hardware and software maintenance support for a 24 CPU Silicon Graphics computer that is used in several courses in the Computer Science Department. This is a very expensive and specialized machine that would be extremely expensive to replace. The requested maintenance will allow the department to continue using the machine in a reliable fashion.

4. Project Description

This proposal requests hardware and software maintenance support for a 24 CPU Silicon Graphics computer that is used in several courses in the Computer Science Department. This machine (hydra.cs.gsu.edu) is a Silicon Graphics computer that has 24 cpus, 200GBytes of disk storage, 4GBytes of main memory, and a CRAY link (high bandwidth interconnect) with hypercube topology. This machine (Hydra), plus a later upgrade cost $308,000. While the machine is now six years old, it is not the type of equipment that is replaced every three years, since replacing it would cost $200-300,000. This computer still functions quite well for its original instructional purpose and can continue to be used for several years.

A problem with this type of computer system is the hardware and software maintenance. Without a hardware maintenance contract, any breakdown can be
extremely expensive as computer boards can cost several thousand dollars plus very expensive labor costs. Since it is used in Computer Science classes, it must be continuously functional during the semester since if it is down many classes will be severely affected. Software maintenance is necessary to get upgrades to the system software, including maintenance patches and upgrades. This is necessary to ensure the smooth and continuous functioning of the machine.

The requested amount is $20,000, which covers the maintenance contract costs. The Computer Science Department employs a full time system administrator who oversees the machine. This was funded at a level of $24,000 last year, which enabled us to keep the machine up and running for the courses.

5. Record the review numbers assigned by IS&T and Facilities. Their assessments must be included in Sections 16 and 17.

| IS&T:  # IST07-043 |
| Facilities: # 13742-05 |

6. Relevance to Regents Guidelines
   This project directly supports Guidelines [1] (Technology fee revenues should be used primarily for the direct benefit of students to assist them in meeting the educational objectives of their academic programs.) and [3] (Technology fee revenues should be used for hardware and Network related expenditures that include support of general purpose or special purpose laboratories used by students for body productivity and more discipline related activities.)

7. Relevance to Strategic Plan(s)
   A major strategic goal of the University, College, and Department is to provide a high quality undergraduate education. For the Computer Science department, this means that our students must have access to the proper equipment so that their education will be competitive with other top level schools. Having a system such as Hydra allows us to be competitive.

8. Impact on Students Served
   The primary courses using Hydra teach parallel and distributed computing and cannot use any other computer on campus. Hydra has a shared memory architecture that cannot be duplicated with a network of PCs. The Computer Science department has over 900 undergraduate majors and over 100 graduate students (Ph.D. and M.S.). A large portion of these students will eventually take a course that uses Hydra. Other courses also use Hydra. It is extremely important for computer science students to understand the basic concepts of parallel and distributed computing since multi-processor machines like this are becoming increasingly common in scientific and engineering industry research, where many CS students find jobs. An average of between 100-150 students per semester take courses using Hydra. Since it is a UNIX system accessible via the Internet, it is accessible 24 hours
9. Justification of Funding Requirements for Fiscal Year 2007

<table>
<thead>
<tr>
<th>Object of Expense</th>
<th>Itemized Descriptions</th>
<th>Quantity</th>
<th>Per unit price</th>
<th>Extended Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplies</td>
<td>(Note: PCs under $5,000 go here. Also, use standard dollar amounts and replacement thresholds from sections 11/12, or provide explanation in sections 11/12.) Item 1</td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Item 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Item 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Item 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Item 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Item 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Item 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>Item 1</td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Item 2, etc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>(Note: Include Vendor and Product Name.) Item 1</td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Item 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance or Contractual Services</td>
<td>Item 1</td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Item 2, etc</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Board of Regents Guidelines state "In almost no cases should technology fee revenues be used for ... space renovation, or other items or activities that do not have a direct and immediate impact upon students instructional objectives." (See Attachment 1, #8)

| Construction Services                   | Item 1                                                                               |          |                | $0.00          |
|                                        | Item 2                                                                               |          |                |                |
|                                        | Item 3                                                                               |          |                |                |
| Network Connections and Infrastructure Costs | Item 1                               |          |                | $0.00          |
|                                           | Item 2                                                                               |          |                |                |
|                                           | Item 3                                                                               |          |                |                |
|                                           | Item 4, etc                                                                          |          |                |                |
| Physical Security                        | (Note: Costs normally should not exceed 2.5% of Total Requested.) Item 1            |          |                | $0.00          |
|                                        | Item 2                                                                               |          |                |                |
|                                        | Item 3                                                                               |          |                |                |
| Other Expenses                           | (explain) Item 1                                                                    |          |                | $0.00          |
|                                        | Item 2, etc                                                                          |          |                |                |

Board of Regents Guidelines state "Technology fee revenues may be used - with caution - for new staffing that is either temporary or ongoing." (See Attachment 1, #6)

| Staff Salaries                          | Item 1                                                                               |          |                | $0.00          |
|                                        | Item 2, etc                                                                          |          |                |                |
| Fringe Benefits                         | Item 1                                                                               |          |                | $0.00          |
|                                        | Item 2, etc                                                                          |          |                |                |

| Student Assistant Salaries              | Item 1                                                                               |          |                | $0.00          |
|                                        | Item 2, etc                                                                          |          |                |                |
| Graduate Student Assistant Salaries     | Item 1                                                                               |          |                | $0.00          |
|                                        | Item 2, etc                                                                          |          |                |                |
| TOTAL                                   |                                                                                     |          |                | $0.00          |

Board of Regents Guidelines state "In almost no cases should technology fee revenues be used for ... space renovation, or other items or activities that do not have a direct and immediate impact upon students instructional objectives." (See Attachment 1, #8)

Staff Salaries Item 1, etc
Fringe Benefits Item 1, etc
Student Assistant Salaries Item 1, etc
Graduate Student Assistant Salaries Item 1, etc
TOTAL $0.00

Hours/wk Hourly Rate

Staff Salaries Item 1, etc
Fringe Benefits Item 1, etc
Student Assistant Salaries Item 1, etc
Graduate Student Assistant Salaries Item 1, etc
TOTAL $0.00

Board of Regents Guidelines state "In almost no cases should technology fee revenues be used for ... space renovation, or other items or activities that do not have a direct and immediate impact upon students instructional objectives." (See Attachment 1, #8)

Staff Salaries Item 1, etc
Fringe Benefits Item 1, etc
Student Assistant Salaries Item 1, etc
Graduate Student Assistant Salaries Item 1, etc
TOTAL $0.00

Hours/wk Hourly Rate

Staff Salaries Item 1, etc
Fringe Benefits Item 1, etc
Student Assistant Salaries Item 1, etc
Graduate Student Assistant Salaries Item 1, etc
TOTAL $0.00
10. Consequences of Partial Funding

Given the current reduced budget, the Computer Science Department would not be able to afford the maintenance contract so the project would not remain viable.

11. Standard Dollar Amounts

Not applicable since this is not a throwaway machine but one that can continue to be used for several years. Replacement costs are about $300,000.

12. Standard Replacement Thresholds

Not applicable

13. Prerequisite, Non-Technology Fee Funding

None

14. Matching Funds

Describe any additional funds that have been committed and will be provided to this project from other sources. These funds should be those that would more effectively leverage the technology fee funding, if approved. Specify whether or not these matching funds are available for a limited time.

None.

15. Staffing and Other Support Availability

The department pays for a full time system administrator (Schaochieh Ou) who oversees the machine. Yi Pan is his supervisor.

16. Space Availability and Impact on Facilities

CBSAC and Planning & Facilities Assessment of Space Availability and Impact on Facilities: This project has no impact on facilities.


Information Security Review (Tammy Clark):
Impact: No
Assessment:

Wireless and Network Ports Review (Mark Roberson):
Impact: No
Assessment:

Server Connections (Charles Hollingsworth, Tammy Clark, Keith Campbell):
Impact: Yes/No (No-CH) (No-TC) (No-KC)
Assessment:

External Connections (Charles Hollingsworth):
Impact: Yes/No (No-CH)
Assessment:
DVR Installations (Mark Roberson, Tammy Clark, Charles Hollingsworth):  
Impact: Yes/No (No- MR) (No-CH) (No-TC)  
Assessment:  

Lab and Classroom Configurations (Joe Amador):  
Impact: Yes/No (NO- JA)  
Assessment:  

18. Physical Security Needs  

*If you are requesting any physical security funding, provide the rationale for these needs here.*  

19. Post-Project Assessment Criteria  

The primary project outcome will be that Hydra continues to a stable platform that supports the Computer Science classes that use it.  

20. Review and Acknowledgements  

Attach electronic notes or documentation showing that the following units or administrators have reviewed or acknowledged this proposal:  
- Matching funds commitment from appropriate fiscal officer
Dr. Yi Pan, Chair  
Department of Computer Science  
Georgia State University  
Atlanta, GA 30303

Dear Yi:

The Department of Chemistry strongly supports the Tech Fee Proposal for FY 2006, "Maintenance of a Multi-Processor UNIX Computer System" submitted by the Department of Computer Science. Funds requested under your department's proposal are for maintenance of the Origin 2000 high-performance computer, which is a key piece of equipment used in the courses taken by M.S. and Ph.D. students from the Department of Chemistry who are engaged in the interdisciplinary Bioinformatics program that includes Biology and Mathematics and Statistics as well as our two departments. Since its inception three years ago, the Bioinformatics program has been very popular among our approximately 75 graduate students. Roughly 10% of the graduate students are doing the Computer Science option and roughly half of the rest use the system as part of their graduate research training.

Sincerely,

A.L. Baumstark  
Professor and Chair of Chemistry