

# ACM/IEEE-CS High Performance Computing Ph.D. Fellowship Program

**Due date: September 8, 2008**

(aka Supercomputing Fellowship)

May 2008

*Contact info:*

- Submission site: <https://submissions.supercomputing.org/>
- E-mail address for questions: [hpc-fellowship-questions@acm.org](mailto:hpc-fellowship-questions@acm.org)

*HPC Fellowship Standing Sub-Committee:*

- William Kramer
- Chuck Koelbel
- Scott Lathrop

## **Summary**

Based on a proposal from the SC conference Steering Committee, the ACM and IEEE Computer Society established a fellowship fund for worthy students who are studying topics in High Performance Computing, Networking, Storage and Analysis. Funded by the surplus of SC|05, this fellowship is sufficiently endowed to fund at least \$20,000 for awards per year. Further contributions may be solicited from future conference surpluses as well as other organizations interested in fostering an educational focus on HPC.

## **Background**

Multiple reports in the past several years, including the High End Computing Revitalization Task Force Report and the National Academy Report on Supercomputing, have noted the need to have a highly trained cadre of HPC scientists and engineers. The National Research Council study on Supercomputing specifically recommends:

*"While it is important to keep senior professionals in the field [of Supercomputing], it is also important to continue to produce next-generation professionals. Funding models that encourage and support the education of the next generation, as well as those that provide the supercomputing infrastructure needed for their education, are necessary. It is also important that students preparing for a career in high-performance computing have confidence that attractive employment opportunities will continue to exist."*

The SC Conference leadership, in partnership with the ACM and IEEE-CS, makes sustained efforts to support training and education for attendees and selected minority serving and general education facilities. Each year, the conference supports 75-100 college students to attend the conference as volunteer workers, but at the same time participate in the conference. The conference has a long tradition of providing an excellent fully-subsidized education program for science and computing instructors at both the college and high school level.

## **Intent**

The ACM/IEEE-CS HPC Ph.D. Fellowship Program honors exceptional Ph.D. students throughout the world with the focus areas of High Performance Computing, Networking, Storage and Analysis. HPC covers the areas of computational sciences, computational engineering, and computer science using the most powerful computers available at a given time. The ACM/IEEE-CS HPC Ph.D. Fellowship Program also supports our long-standing commitment to workforce diversity and encourages nominations of women, minorities and all who contribute to diversity.

## **Scope**

ACM/IEEE-CS HPC Ph.D. Fellowships are awarded with a certificate and a stipend of at least \$5,000 (US) for one academic year. All ACM/IEEE-CS HPC Ph.D. Fellows are invited to attend at least one SC conference (usually the one after one year of receiving the award). Furthermore, the SC Steering Committee and other conference volunteers are willing to facilitate, where possible, internships for Fellows at HPC research or development sites. Interns are paid by their host site and will be subject to the prevailing terms and conditions of the internship program at that site. ACM/IEEE-CS HPC Ph.D. Fellowships are awarded annually but previous awardees may compete annually to be renewed for up to two additional years (three total), based on the Award Recipient's continued exceptional academic standing, progress, achievement, and sustained interaction with the HPC technical community. All Fellowship Recipients pursuing an award renewal must be re-nominated to compete for an award renewal. A maximum of one nomination per academic department will be considered in addition to any renewal nominations from that department.

## **Eligibility**

Students must be nominated by a full time faculty member at a PhD granting institution. They must be enrolled in a full-time Ph. D program, and they should have completed at least one year of study in their doctoral program at the time of their nomination. Fellowship recipients will be selected based on:

- Their overall potential for research excellence,
- The degree to which their technical interests align with those of the HPC community,

- Their academic progress to-date, as evidenced by publications and endorsements from their faculty advisor and department head as well as a plan of study to enhance HPC related skills
- The demonstration of their current and/or anticipated use of HPC resources.

All applicants must meet minimum scholarship requirements at the institution where they are or will be registered.

## Procedures

Applications will be made to the SC Steering Committee's Standing Sub-Committee for HPC Fellowship (SSC-HPCF) via the SC submission web site - <https://submissions.supercomputing.org/>. This site will be where a one can register for submitting and application and, once done, will allow one to enter the application information. The nomination deadline will be set by the SSC-HPCF. The applications shall include a current application form, a list of the applicant's academic awards, a description of the proposed research, and a list of applicant's publications / presentations. Each application shall include at least 1 letters of recommendation from their thesis supervisor and department head. Additional letters of recommendation will also be considered.

Nominations will be submitted via the SC submission web site - <https://submissions.supercomputing.org/>. SC Steering Committee, through the SSC-HPCF, will oversee the ACM/IEEE-CS HPC Ph.D. Fellowship Program, under the guidelines and policy of ACM SIGARCH. The SC Steering Committee shall select the awardees, in accordance with guidelines established by ACM policy. The selection will be based on academic excellence, the applicant's research proposal and the potential impact of the research in it's field of endeavor as well as the letters in support of the candidate's application. The ACM/IEEE-CS Ph.D. Fellowship Program supports a long-standing commitment by the Societies and the SC Conference series to workforce diversity and encourages nominations of women, minorities and all who contribute to diversity. All applications are considered in confidence. All award decisions are final.

## Renewals

A Scholarship is awarded on a yearly basis. It is renewable two times, upon application and subject to availability of funds. All applications for renewal will be placed in competition with applications received by the closing date for that competition. Applicants applying for renewal must be registered in a PhD program. Candidates must be conducting computation on HPC resources by the end of their first scholarship term. Renewal Applications must include: a new letters of recommendation from their thesis supervisor and department head focusing on progress made in the first scholarship term, and, a 1 - 2 page research statement to explain the applicant's research, the importance of the research, use of HPC, progress to date including papers pending for publication, presentations at conferences, etc. and plans for the next year.

## Recognition

The SC Steering Committee, the ACM and the IEEE Computer Society reserve the right to publicize in the public domain the names of the recipient, their research topics, institution and other general information.

## Endowment

The expectation is that up to three (3) awards of at least \$5,000 will be made each year at the current endowment level. In addition to the \$5,000 stipend, awardees will receive a certificate and be invited to be student volunteers at the conference. Up to \$2,000 per year will be allocated to certificates and expenses to attend the SC conference. If the endowment increases, more awards and/or larger awards will be considered. Likewise, if the endowment decreases, the number and/or size of the awards will be adjusted.

## Award Selection Committee

The management and selection of the ACM/IEEE-CS HPC Ph.D. Fellowship awards is the responsibility of the SC Steering Committee, under the guidelines set by the ACM SIGARCH. The SC Steering Committee created a standing sub-committee to serve selection committee SC Steering Committee's Standing Sub-Committee for HPC Fellowship (SSC-HPCF). The SC Steering Committee shall also be responsible for the solicitation of nominations, the administration of the award and the publicity and solicitation of proposals. The SC Steering committee may delegate part or all of these responsibilities to a subcommittee.

## Past Awardees

### 2007 Awardees

52 excellent applications submitted in 2007. The applications represented a broad range of research areas. Applicants are attending 42 different institutions in 8 different countries.

Awardee	Institution	Advisor	Area of Study
Mark Hoemmen	University of California at Berkeley	Professor James Demmel	Algorithms - communication-avoiding linear algebra'
Arpith Chacko Jacob	Washington University of St. Louis	Professor Jeremy Buhler	Hardware Architecture – FPGA use that accelerates DNA sequence analysis
Chao Wang	North Carolina State	Professor Frank	System Software -

	University	Mueller	Fault tolerance for extreme scale systems
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### 2007 Honorable Mention

Honorable Mention	Institution	Advisor	Area of Study
Young Chen	Illinois Institute of Technology	Professor Xian-HE Sun	System Software – Parallel I/O Concurrency
Kamesh Madduri	Georgia Institute of Technology	Professor David Bader	Efficient solutions for large scale graph theory.