

## CHARTER RENEWAL APPLICATION

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Imaging Science. The SIAM Activity Group (or SIAG) to which this renewal applies was originally formed under the aegis of SIAM on by the SIAM Council by electronic voting in January 2000 and by the SIAM Board of Trustees December 11, 1999 with its initial operating period beginning January 21, 2000 and ending December 31, 2002. Its charter has been renewed by the Council and Board two times thereafter. This SIAG had 423 members as of December 31, 2006.

According to its Rules of Procedure, the objective(s) of the SIAG are to:

- provide a forum for conferences and scientific interactions between imaging science researchers and practitioners in academics, industry, medicine, and government,
- encourage research that will provide a rigorous mathematical foundation for imaging science,
- foster research in mathematics and computation that has the potential for solving real-world problems in imaging science, and leads to new methods and techniques useful in this subject,
- provide the means for rapid publication and dissemination of novel methods in imaging science.

Its purposed functions were to:

- Organize minisymposia at the SIAM Annual Meeting on years where there is no SIAG conference.
- Organize a track of at least six minisymposia at the SIAM Annual Meeting at least once every five years. The VP for Programs and the VP at Large will coordinate the scheduling with the SIAG chairs.
- Organize a biennial SIAM Conference on imaging science.

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The SIAG has complemented SIAM's activities and supported its proposed functions. The answers to the questions below indicate how this was accomplished and what the officers propose as the future directions for the SIAG.

1. How is the field covered by the activity group doing? Is it growing, is the focus shifting? What have been the significant advances over the last three years?

*The role and of imaging in science and industry is expanding rapidly due to new technologies (e.g., diffusion tensor imaging, network tomography, two-photon imaging), new methodologies (e.g., random and compressive sensing, inpainting) and continuing applications to movie-making, medicine, computational biology, machine vision, materials science, particle physics, remote-sensing and internet search. The importance of this activity has been recognized by the recent appearance of a new SIAM Journal on Imaging Science. Finally, one grand new challenge is joining biological imaging and bioinformatics.*

2. How is the activity group doing? Is it remaining vibrant? Is the size of the SIAG stable or increasing? How is the SIAG keeping up with the changes in the field? How are the broader interests of SIAM reflected in the activities of the SIAG?

*The activity group had 423 members at the end of the last calendar year, with 168 of these students. This is a relatively young activity group and the membership represents substantial growth over the last several years. In addition, the range of applications is expanding to include image interpretation as well as the more classical areas of image formation and image processing.*

3. Please list conferences/workshops the activity group has sponsored or co-sponsored over the past three years, and give a brief (one sentence or phrase) indication of the success or problems with each.

*The activity group sponsors the biennial SIAM Conference on Imaging Science. The last conference was held May 15-17, 2006 in Minneapolis. The conference attracted 269 attendees of which 78 were students.*

4. Please indicate the number of minisymposia directly organized by the activity group at the last two SIAM annual meetings. When did the SIAG last organize a tract of minisymposia at an annual meeting?

*There was considerable imaging-related activity at the 2006 SIAM Annual Meeting, including minisymposia on brain imaging, computational imaging in the medical sciences and several on inverse problems, at least one of which was organized by the SIAG. Minisymposia on landmine detection and on level set methods were organized at the 2005 Annual Meeting.*

5. Please indicate other activities sponsored by the activity group, to include newsletters, prizes and Web sites. Have each of these been active and successful?

*The AG published a newsletter in August 2006 and the SIAG/IS website has recently been considerably expanded, including a thorough description of the "World of Imaging."*

6. What activities are planned and proposed for the next period of the charter? Please describe scheduled and suggested future activities in detail.

*The main event will be Imaging Science Symposium in July 2008, to be held concurrently with the SIAM 2008 Annual Meeting in San Diego. The intention is to expand the range of topics to include work on semantic image interpretation with at least one plenary talk in this area. It is also anticipated that there will be one issue of the Newsletter each year as well as another article on the Imaging Science Symposium in SIAM News (as in September, 2006).*

7. How can SIAM help the activity group achieve its goals?

*From a public relations point of view, and in the same fashion that results in pure mathematics have recently drawn public attention, recent advances in imaging provide an opportunity for an enhanced exposure of the applications of mathematics to problems of high interest to the general public, such as weather forecasting, human health and motion picture making. Perhaps SIAM could exploit this opportunity through high-level talks and articles in the popular press. After all, few things catch the attention of the general public more than enticing images.*

8. How can the activity group help SIAM in its general role of promoting applied mathematics and computational science?

*The activity group could work with SIAM in implementing suggestions such as those put forth in item 7.*

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2008.

Signed

Donald Geman  
June 13, 2007

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