

## **SIAM Activity Group Optimization Charter Renewal Application**

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Optimization. The SIAG/OPT was originally formed under the aegis of SIAM on October 27, 1985 by the SIAM Board of Trustees and electronically by the SIAM Council in January 2000. Its initial operating period began January 1, 1986 and ending December 31, 1988. Its charter has been renewed by the Council and Board 10 (ten) times thereafter.

This SIAG has 1,339 members, including 783 student members, as of December 31, 2018.

According to its Rules of Procedure, the objective(s) of the SIAG are to provide an environment for interaction between applied mathematicians, computer scientists, engineers, scientists, and others interested in optimization. The SIAG aims to foster the development of methods, software, and theory for optimization, and to foster the use of optimization techniques in scientific and industrial applications. Within the framework of SIAM, the SIAG will conduct activities that implement its purposes.

Its purposed functions were:

The SIAG on OPT will organize activities in Optimization. The SIAG is expected to:

1. Organize minisymposia at the SIAM Annual Meeting in years where there is no SIAG conference.
2. 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.
3. Organize a triennial SIAM Conference on Optimization. The SIAG will consider dovetailing specialized workshops and conferences with the SIAM Annual Meeting or other SIAG conferences. The co-Chairs of the Conference Organizing Committee shall be the Program Director and the Chair of the SIAG or their designees. The organizing committee must be approved by the VP for Programs at least 16 months before the conference.
4. With the approval of the SIAM Program Committee, the SIAG may organize special sessions at SIAM meetings, and conduct special one- or two-day meetings immediately before or after a regular SIAM meeting. Other SIAG meetings may be organized only with the approval of the SIAM President and Vice President for Programs.
5. Awarding of the triennial SIAG/Optimization prize, established in 1992.
6. Awarding of the SIAG/Optimization Early Career Prize, established in 2018.
7. Maintain a SIAG wiki site [http://wiki.siam.org/siag-op/index.php/Main\\_Page](http://wiki.siam.org/siag-op/index.php/Main_Page) or produce a newsletter for SIAG members.
8. Publish the semi-annual newsletter SAIG/OPT News and Views.

The SIAG will organize these and other activities in order to (1) promote interaction between applied mathematicians, computer scientists, engineers, scientists, and others interested in

optimization; (2) keep SIAM membership up to date on developments in optimization; and (3) facilitate development and application of optimization methods, software, and theory.

SIAG meetings, workshops, and conferences may be organized only with the approval of the SIAM President and the SIAM Vice President for Programs.

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. *List all current officers of the activity group (including advisory board, if relevant).*

Tamás Terlaky (chair)  
Andreas Wächter (vice-chair)  
Michael P. Friedlander (program director)  
James Luedtke (secretary)

2. *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?*

Optimization remains a central part of many applied disciplines, including all engineering fields, applied mathematics, and other science discipline. All optimization subdomains remain active, including nonlinear, non-smooth, discrete, and derivative-free optimization. Optimization is at the heart of data science, where optimization methods provide the tools to train the prediction models; this aspect has been particularly growing. In the future, new developments might be expected in areas such as uncertainty quantification and quantum computing.

3. *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 membership has grown compared to the past three-year period, particularly with respect to the student members. The number of registered participants at the triennial SIOPT conference has increased by almost 10% compared to the last one, to almost 700 participants. The field of optimization is closely related to many other areas within SIAM such as computational science and engineering, control and systems theory, data mining and analytics, and imaging science and uncertainty quantification. The SIAG/Opt is the second largest of all SIAM activity groups. Numerous members of the SIAG/Opt are very active in the hot-topic area of machine learning and optimization, and getting engaged in the emerging Quantum computing/optimization area.

4. *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.*

- SIAG/Opt is the organizer of the triennial SIAM Conference on Optimization. The last one took place in Vancouver in 2017. The full list of previous conference in this series may be found here: see <https://archive.siam.org/meetings/archives.php#OP>.
- ISMP 2018: International Symposium on Mathematical Programming, Bordeaux, France. This is the main conference of the Mathematical Optimization Society (MOS) and continues to see an increasing number of

participants. The site <https://ismp2018.sciencesconf.org/> includes a list of all past conferences in that series.

- The yearly MOPTA (Modeling and Optimization: Theory and Applications) conference series (see <http://coral.ie.lehigh.edu/~mopta/moptas>). The annual MOPTA conferences are organized since 2000. MOPTA aims at bringing together a diverse group of people from both discrete and continuous optimization, working on both theoretical and applied aspects. There is a small number of plenary talks from distinguished speakers. MOPTA's aim is to bring together researchers from both the theoretical and applied communities who do not usually have the chance to interact in the framework of a medium-scale event

5. *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 track at an annual meeting or meet jointly with the SIAM Annual Meeting?*

Three minisymposia were organized during the 2018 annual SIAM meeting AN18, one on the topic of "Nonsmooth Optimization" and two on the topic of "Mathematics of Signal Processing, Optimization and Inverse Problems". The SIAG last organized a track at AN10.

6. *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 activity group publishes the *SIAG/OPT News and Views* newspaper ([http://wiki.siam.org/siag-op/index.php/View\\_and\\_News](http://wiki.siam.org/siag-op/index.php/View_and_News)) once or twice a year. During the last three years there were four issues, including a special issue for the 2017 SIAM OP meeting.
- The activity group awards the *SIAM Activity Group on Optimization Best Paper Prize* every three years. It is presented at the triennial SIAM OP meetings. In 2017 it was awarded to Jérôme Bolte, Shoham Sabach, and Marc Teboulle.
- This year, we will also establish a new prize for younger researchers, the *SIAM Activity Group on Optimization Early Career Prize*, which will be awarded for the first time at the 2020 SIAM OPT meeting.
- The activity group maintains a wiki with essential OPT-related information, see [http://wiki.siam.org/siag-op/index.php/SIAG\\_on\\_Optimization](http://wiki.siam.org/siag-op/index.php/SIAG_on_Optimization).
- The activity group maintains an active mailing list at which OPT members can post advertising of open positions, conference, etc.

All of these are active and successful.

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

The next main activity is the organization of the SIAM OPT meeting in 2020 in Hong Kong. This is also the first time our Early Career research prize will be awarded.

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

SIAM provides excellent logistical support for the activity group and handles the non-programmatic elements of the optimization conferences. It also hosts the activity group website and wiki, and helps to organizing the prize committees.

9. *How can the activity group help SIAM in its general role of promoting optimization?*

The SIAG promotes SIAM membership at the business meeting at the SIAM Optimization Conference and through its website and wiki. We encourage publication in SIOPT, which is one of the two leading journals in optimization. We will work on organizing minisymposia at the next SIAM annual meeting. In addition to the SIAG prize, SIAG/OPT members are active in the solicitation of nominations and the selection for the SIAM/Mathematical Optimization prizes, the George B. Dantzig Prize and the Lagrange Prize in Continuous Optimization.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a three-year operating period beginning January 1, 2020.

Signed  
Tamás Terlaky, Chair of the SIAG on Optimization  
April 25, 2019