

CHARTER RENEWAL APPLICATION

SIAG SDM (Data Mining & Analytics)

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Data Mining & Analytics. The SIAG/SDM was originally formed under the aegis of SIAM on July 17, 2011 by the SIAM Council and by the SIAM Board of Trustees. This is the second charter renewal to be renewed by the council and board thereafter. The SIAG had 458 members as of December 31, 2014; of these, 247 were students.

The aim of the SIAM Activity Group on Data Mining is to advance the mathematics of data mining, to highlight the importance and benefits of the application of data mining, and to identify and explore the connections between data mining and other applied sciences. Within the framework of SIAM, the SIAG will conduct activities that implement its purposes.

The SIAG on Data Mining and Analytics organizes activities in Data Mining. The SIAG is expected to:

1. Organize minisymposia at the SIAM Annual Meeting.
2. At least once every five years, either organize a track of at least six minisymposia at the SIAM Annual Meeting or have an activity group meeting held jointly with the annual meeting. The VP for Programs and the VP at Large will coordinate the scheduling with the SIAG chair.
3. Organize a yearly SIAM International Conference on Data Mining (SDM). The program director and chairperson of the SIAG are responsible for ensuring the continuity of SDM, including either serving as co-chairs of the meeting or naming appropriate designees. The organizing committee must be approved by the VP for programs at least 16 months before the conference.

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.

I. 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 past [two/three] years?

Data mining and analytics is a rapidly growing field. The number of participants at established data mining conferences is increasing as well as the number of journal and conference submissions. The focus on big data analytics is strong as well as work on analysis and modeling of social and information networks. In recent years big data applications related to health informatics are increasingly common.

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?

In the last two years the SIAG membership increased from 261 to 458 as shown at Figure

1.

The SIAG is keeping up with changes in the field by keeping the SIAM Data Mining (SDM) conference as one of the best in the area. Activities include rigorous review process for submitted manuscripts, organizing exciting plenary lectures, interesting panels and workshop and tutorials on current topics. Figure 2 shows the results of a survey at the year 2014 SDM conference according to which 95% of responders agreed that the conference program was exciting, 83% agreed that the plenary lecture was interesting and 91% agreed that they learned useful information at the conference.

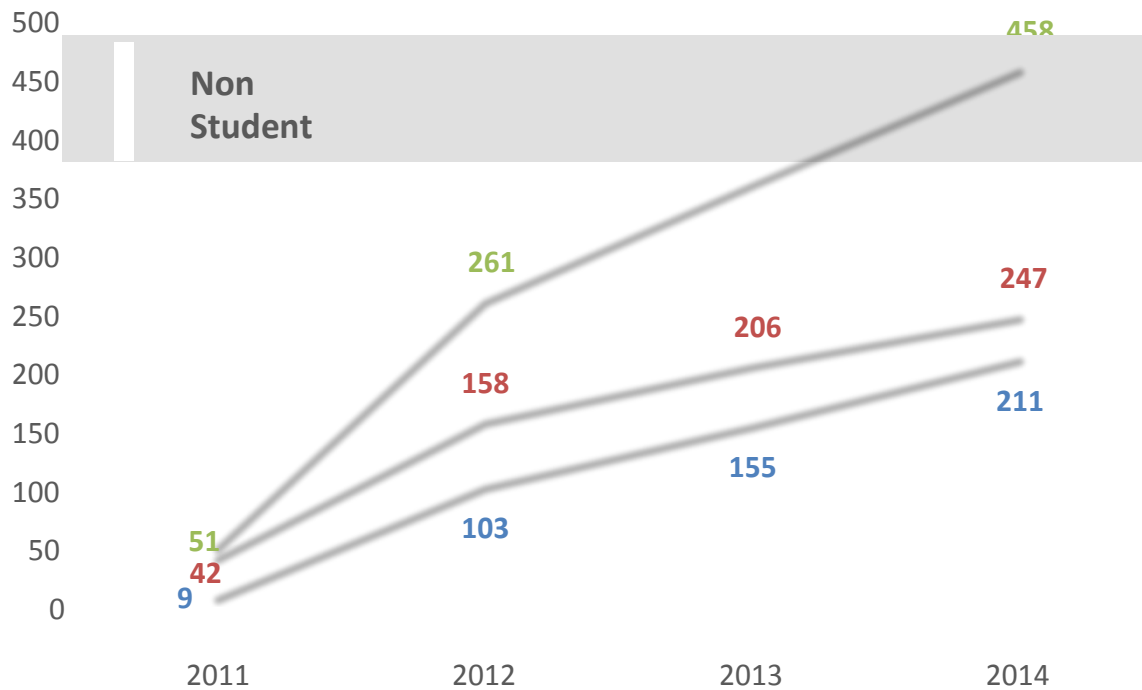


Figure 1: The total number of SIAG members (green), the number of student members (red) and non-student members (blue) from year 2011 to 2014

	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
Excellent program	28%	67%	2%	1%	1%
Interesting plenary talk	36%	47%	8%	5%	4%
I learned useful information	32%	59%	6%	1%	2%

Figure 2: Survey results at the 2014 SIAM Data Mining Conference (April 2014)

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

The 2014 SIAM International Conference on Data Mining was held in Philadelphia, PA on April of 2014 with the record high attendees of 319.

The 2015 SIAM International Conference on Data Mining was held in Vancouver, Canada on April 30 – May 2, 2015. Attendance was 260.

SDM has established itself as a premier meeting for the mathematical aspects of data mining. This is reflected in its ranking among the conferences in the "data mining" category on MSR academic search summarized at Figure 3.

	<i>KDD</i>	<i>SDM</i>	<i>ICDM</i>	<i>ECML/PKDD</i>	<i>CIKM</i>	<i>ICDE</i>
<i>#papers (10yr)</i>	<i>1212</i>	<i>611</i>	<i>2241</i>	<i>634</i>	<i>1840</i>	<i>2370</i>
<i>#cites/paper (10yr)</i>	<i>18.8</i>	<i>11.1</i>	<i>5.1</i>	<i>5.9</i>	<i>6.3</i>	<i>9.8</i>
<i>Reg (regular)</i>	<i>\$750- \$1150</i>	<i>\$525- \$755</i>	<i>\$675 - \$969</i>	<i>\$546 -- \$660</i>	<i>\$740 - \$990</i>	<i>\$760 - \$1165</i>
<i>Reg (student)</i>	<i>\$400- \$600</i>	<i>\$200- \$225</i>	<i>\$400 - \$581</i>	<i>\$400- \$600</i>	<i>\$520 - \$700</i>	<i>\$420 - \$620</i>

Figure 3: Ranking of SDM among the top data mining conferences

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 track of minisymposia at an annual meeting?

SIAG DMA sponsored minisymposium is organized at ICIAM 2015 (Beijing, China, Aug. 10–14, 2015). This minisymposium is chaired by Prof. Fei Wang from Univ. Connecticut.

Dr. Jeremy Kepner from MIT will chair SIAG DMA sponsored session at the 2016 SIAM 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 best papers among those published at the SDM conference proceedings are invited for extension and consideration at the special issue of the Statistical Analysis and Data Mining Journal which is the official journal of American Statistical Society.

Starting in year 2015 audio slides of SIAM Data Mining conference are captured and provided to the community.

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

SIAG/DMA is currently dominated by academia. Government employed members are only 9% and even industry is only 15% of members. The objective for the next period is to actively approach both government and industry points of contact as to increase membership in these categories.

Another objective is to increase the number of statistics and engineering members as the number of members in these categories are currently low (see Figure 4).

Another objective is to explore mini-symposia at SDM with other relevant SIAGs, such as the ones on linear algebra, mathematical aspects of materials science, discrete mathematics, optimization, imaging science, and uncertainty quantification.

SIAG/DMA Departments

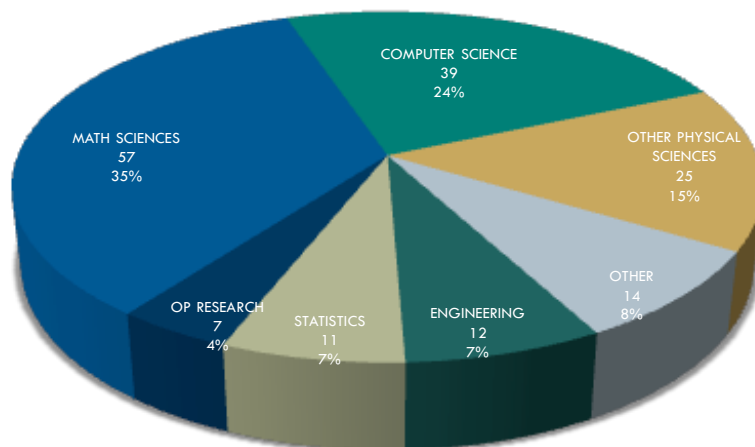


Figure 4: SIAG/DMA departments

Another opportunity to grow is statisticians (in addition to engineers). There are only 7% of statisticians in SIAG/DMA and 7% of engineers.

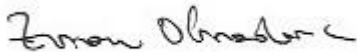
7. How can SIAM help the activity group achieve its goals?

SIAM currently provides excellent support in organizing the SDM conference. In the future, we would like to explore better ways of reaching out to members, through SIAM contacts in other Special Interest Groups.

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

The activity group, through the organization of the SDM conference, helps SIAM to connect with participants interested in the mathematical aspects of data mining and the use of data mining in solving real problems.

This SIAG requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2016.



Zoran Obradovic, SIAG
Chair

June 16, 2015