



Association for
Computing Machinery

ANNUAL REPORT

F I S C A L Y E A R

2017

*ACM, the Association for Computing Machinery,
is an international scientific and educational organization dedicated to
advancing the arts, sciences, and applications of information technology.*

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Computing Machinery**

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Letter from the President



FY17 was a year in which ACM had many reasons to celebrate its past, present, and our hopes for the future.

We stepped into this fiscal year gazing forward with the introduction of the ACM Future of Computing (ACM-FCA). This initiative—paramount to the organization’s future—provides a platform for the next generation of talented computing professionals to address what they see as the most pressing challenges facing the industry. I am pleased to report the response to the ACM-FCA was instant; in a matter of weeks we had an inaugural class of 46 selected from over 300 applicants from around the world. These future researchers, practitioners, educators, and entrepreneurs from 19 different countries will not only tackle some of the major issues in the computing field, they will help inform and influence the kind of new initiatives that will carry ACM into the future.

Another major undertaking that took off this year is Code 2018—an exhaustive two-year project launched by the ACM Professional Ethics Committee to update its landmark Code of Ethics and Professional Conduct. The code, now 25 years old, has served the computing industry well, providing guidelines and a social contract of what brings us together as a profession. COPE has shared drafts of the code revisions throughout the year, encouraging members to play an active role in its rewrite. The committee expects the final version to be ready later this year.

We ended FY17 celebrating the 50th Anniversary of the ACM A.M. Turing Award with event-filled conferences in Shanghai and San Francisco. This milestone occasion was designed to highlight the significant impact of the contributions of the Turing Laureates on computing and society. Indeed, at the two-day San Francisco conference, we were honored to host 23 Laureates, many of whom delivered talks or participated in panel discussions. We are indebted for the generous support from our SIGs as well as corporations such as Google, Microsoft, Amazon, Oracle, and IBM. It was an inspired event drawing a capacity crowd. A global spotlight was directed on ACM and its renowned award for computing excellence. It was a perfect way to close one FY and to begin a new one.

In the following pages we offer a glimpse into a year in the life of ACM—our publications, conferences, practitioner products, public policy efforts, education initiatives, and global hubs. It is by no means all-inclusive, but I do hope you find it captures an Association ever in motion: all encompassing, always planning and providing new services and support for our members. And, as always, we are most grateful for the industry and membership support we receive each year that help turn our ideas into reality.

Vicki L. Hanson
ACM President
July 1, 2016–June 30, 2018

Publications Portfolio



17.5 MILLION
Number of full-text
downloads in FY17



**2,900 FROM
90 COUNTRIES**
Number of institutional
DL subscribers



25,500
Number of individual
DL subscribers worldwide



**6+ MILLION
FROM OVER
200 COUNTRIES**
Number of individual
DL users

Publications remain one of ACM's principal activities and pivotal lines of business. The ACM Publications Board is tasked with supervising a rich portfolio, including scientific journals, magazines, books, and conference/workshop proceedings (in tandem with ACM SIGs and through the International Conference Proceedings Series, ICPS). The Board also oversees publication policies, ethics and plagiarism cases, author rights as well as guides the ongoing development of the cornerstone of ACM's publications offerings—the ACM Digital Library.

In FY17, over 29,000 full-text articles were added to the Digital Library, bringing the total DL holdings to 450,000 articles. ACM's *Guide to Computing Literature* is also integrated within the DL. More than 140,000 works were added to the bibliographic database in FY17, bringing the total *Guide* coverage to more than 2.70 million works.

During the year, ACM added 602 volumes of conference and related workshop proceedings to its portfolio, including 160 volumes added to ACM's ICPS, a 24% increase over FY16.

ACM's Publications Portfolio

48

Journals and
Transactions

8

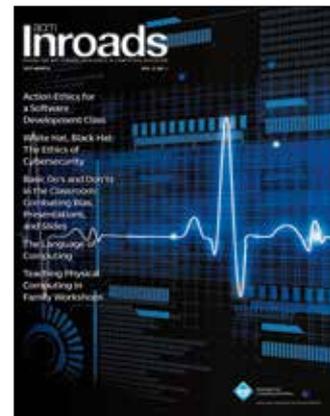
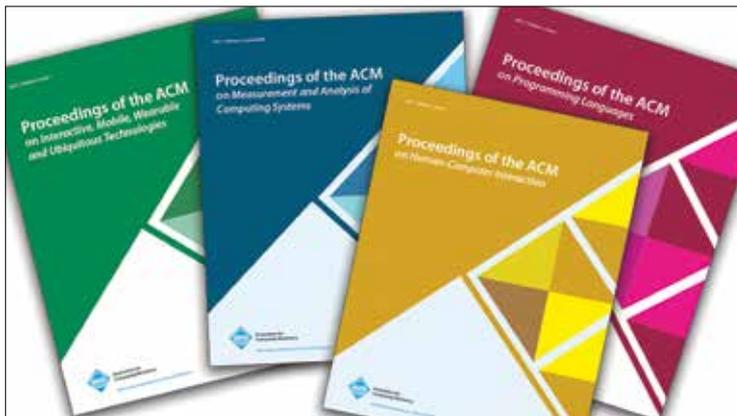
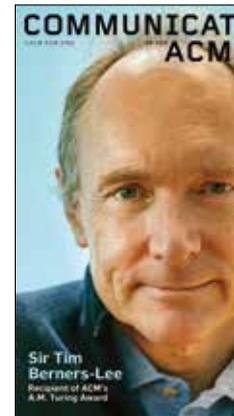
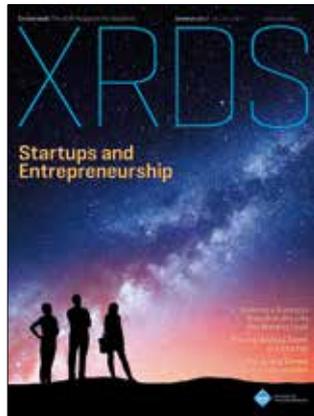
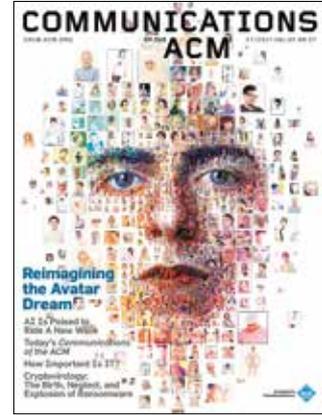
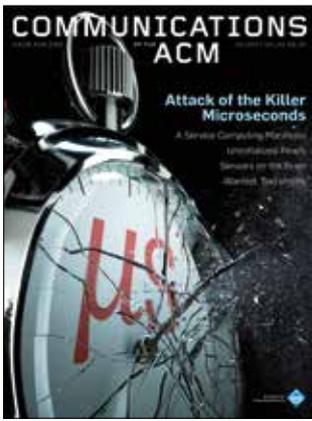
Magazines

30

Newsletters

FY17 was a productive year in terms of publication achievements:

- ▶ The new *Proceedings of the ACM* journal series launched with four titles. This series provides a venue for top-quality conferences that adopt journal review practices to polish their work in a journal title for greater impact and recognition.
- ▶ Major milestones in ACM's Reproducibility initiative were realized, including full rollout of the Artifact Evaluation and replication badges.
- ▶ Completion of a wide-scale market research project focused on the ACM DL and provided a number of key findings that fueled the development of a new plan for the next-gen ACM DL.



Education

ACM leads the computer science education community through the work of its ACM Education Board, the ACM Education Council, ACM SIGCSE, Computer Science Teachers Association (CSTA), and ACM Education Policy Committee.

The Education Board made great headway toward developing comprehensive curricular guidance in cybersecurity education. The ACM-led Joint Task Force on Cybersecurity Education put the finishing touches on the latest draft of Curriculum Guidelines for Post-Secondary Degree Programs in Cybersecurity (CSEC2017) for public comment. The publication of this greatly anticipated curriculum is imminent.

The Board is also spiriting a computing-focused undergraduate data science curricula effort. A task force is forming to examine current data science curriculum initiatives globally and determine how ACM can best advance data science education in the context of those efforts.

The K-12 CS Framework (<https://k12cs.org/>) had its official release in October 2016, designed to guide computer science from a subject for the fortunate few to an opportunity for all. The framework reflects a comprehensive collaboration between ACM, code.org, CSTA, Cyber Innovation Center, and the National Math and Science Initiative as well as U.S. states and the computer science education community. States, districts, and organizations can use the framework to inform the development of standards and curriculum, build capacity for teaching computer science, and implement computer science pathways.

The Education Board's Capacity Task Force continues to analyze the situation facing academic CS departments caught between rapidly rising student enrollments and the inability to hire necessary faculty. The committee is charged with developing effective recommendations that academic institutions and other stakeholders can take to address the problem of insufficient capacity.

The Education Board's Diversity Task Force built upon last year's successful efforts inspecting international diversity. Questions for a comprehensive CSTA global survey were finalized; the results of the data gathered from this survey will be used to determine the best methods for supporting international diversity.



Rocky Mountain Celebration of Women in Computing, October 2016.



ACM chapter members at the University of Ibadan, Nigeria.



ACM joined forces with Code.org and CSTA among others as architects of the K-12 CS Framework.

The Capacity Task Force is analyzing the challenges faced by CS departments dealing with rising student enrollment.

Professional Development

The Practitioners Board and Professional Development Committee (PDC) directed many new products and initiatives designed for computing professionals and managers. In FY17, the Board created and expanded a rich set of activities.

The Board's newly formed Conference Committee had a stellar debut in February, with the establishment of AI Decentralized (www.aidecentralized.com). This initiative will promote a series of practitioner-oriented workshops at the intersection of artificial intelligence and blockchain technologies. The goal of these workshops is to tap into meet-up groups in 25–30 major cities to connect AI practitioners with blockchainers.

The Distinguished Speaker Committee program under Practitioner Board

Professional Members **65,000+**

32,000+ Student Members

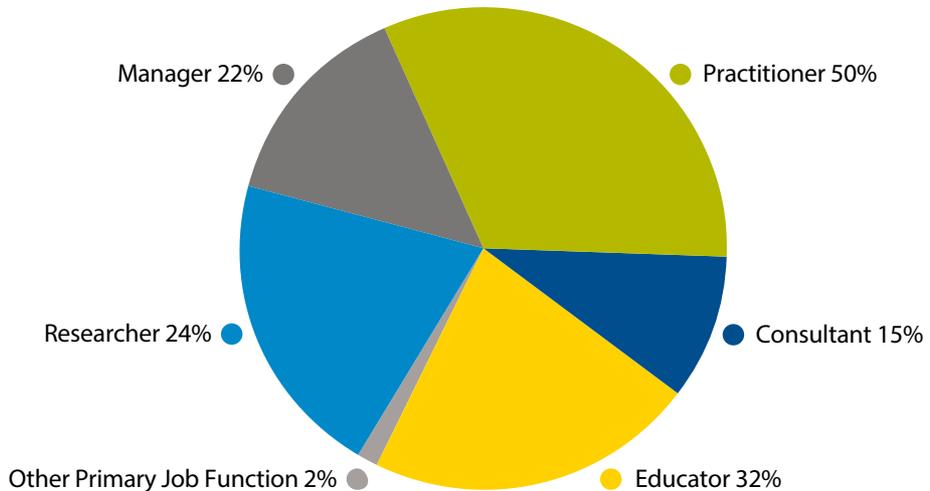
FY17	CHAPTER STATS
150	total new chapters
17	new professional chapters worldwide
133	new student chapters worldwide

auspices increased emphasis on practitioner/entrepreneur speakers. The lectures realized a 32% increase in audience reach over the average of the last several fiscal years.

The Global Practitioner Advisory Committee is designed to establish real-time interactive marketing ideas and innovations on a number of areas of interest and import to practitioners. The findings of this committee provide advice to ACM on potential new products and services for the practitioner community.

The Global Practitioner Advisory Committee is designed to establish real-time interactive market-

Breakout of ACM Membership FY17



Public Policy

ACM's U.S. Public Policy Council (USACM) made significant progress this year in delivering on its mission to educate and inform policy leaders, ACM members, the computing community, and the public about policy issues related to IT and computing.

Recognizing the ubiquity of algorithms in our daily lives, as well as their far-reaching impact, USACM and the ACM Europe Policy Committee (EUACM) issued a joint statement and a list of seven principles designed to address potential harmful bias. The goals of the statement include: providing context for what algorithms are, how they make decisions, and the technical challenges and opportunities to prevent and mitigate potential harmful bias. The announcement demonstrated their shared support for principles to help minimize the potential for harm in algorithmic decision-making.

USACM and EUACM also released a Statement on IoT Privacy and Security, addressing existing and expected privacy and security concerns in the Internet of Things (IoT) ecosystem. The principles embodied in the USACM/EUACM statement propose policy and technical approaches to tackle emerging privacy and security challenges while ensuring the technology continues to move forward. The statement highlights the importance of addressing IoT privacy and security throughout the entire life cycle of a product.

Over the course of the fiscal year, USACM issued comments to the Presidential Commission on Enhancing National Cybersecurity, addressing the challenges and possible approaches to strengthening cybersecurity in the digital economy while protecting privacy and enabling innovation. Feedback was also submitted on computing and network security that embodies principles to secure computational environments, and to the National Telecommunications and Information Administration on their green paper on "Fostering Advancement of the Internet of Things."

The Committee on Computers and Public Policy assists ACM in a variety of relevant issues pertaining to computers and public policy around the world. Most notably, CCP's respected *ACM Forum on Risks to the Public in Computers and Related Systems* continues to share and discuss potential and serious computer-related risks with a global audience.

Students

One of the Association's favorite events each year is the ACM International Collegiate Programming Contest (ICPC). ACM-ICPC is the premier global programming competition conducted by and for the world's universities. It is conceived, operated and shepherded by ACM, sponsored by IBM, and headquartered at Baylor University. For more than four decades, the competition has raised the aspirations and performance of generations of the world's problem solvers in computing sciences and engineering.

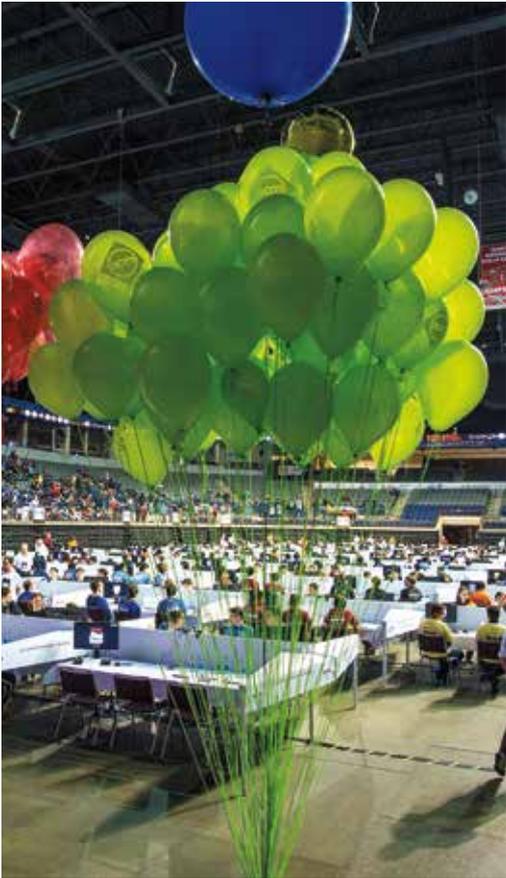
Three students from St. Petersburg University of IT, Mechanics and Optics (ITMO) earned the title of 2017 World Champions. ICPC regional participation included 46,381 students and faculty in computing disciplines from 2,948 universities in 103 countries on six continents. A record 50,145 students and 5,073 coaches competed in ICPC and ICPC-assisted competitions this year.

SIGAI held a student essay contest on the Responsible Use of AI Technologies. Students were eligible to win \$500 or a Skype conversation with five very senior AI researchers by responding to questions having to do with what they see as the most pressing AI issues and what can governments, industries, and organizations take to address these issues.

The 2017 ACM Student Research Competition offers a unique forum for undergraduate and graduate students to present their original research before a panel of judges and attendees at ACM conferences. This year's competition, sponsored by Microsoft, drew over 330 computer science students who presented research projects at 24 participating ACM conferences.



ACM-W student scholarship recipients.



Randy Filand



ACM Doctoral Dissertation Award winner Haitham Hassanieh.



Student volunteers at SC16.

ICPC was held in Rapid City, SD—the first U.S.-based competition in 12 years.

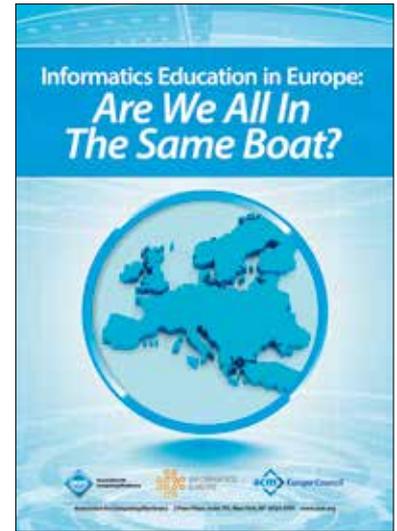


Randy Filand

ICPC 2017 drew teams from over 2,900 universities on six continents.

... ACM Europe Council

ACM Europe and Informatics Europe continued their work highlighting the need for increased investment in CS education in Europe in order to remain competitive in a global technology arena. The joint Committee on European Computing Education (CECE) issued the final version of their report last May. *Informatics Education in Europe: Are We All In The Same Boat?* (<http://www.acm.org/binaries/content/assets/education/cecereport.pdf>) presents the findings of an extensive, two-year study and provides a country-by-country description of the state of affairs in informatics education, digital literacy, and teacher training throughout Europe.



ACM-W Europe womenEncourage 2016 Celebration of Women in Computing was held in Linz, Austria, and once again drew enthusiastic crowds. The annual event is tailored at networking and exploring career opportunities for women in computer science and related disciplines.

The first ACM Europe Summer School was held last July hosting 60 students from 300 applicants.

... ACM India Council

Last January, Microsoft Research (MSR) and ACM India co-organized the second edition of the Academic Research Summit in partnership with the Department of Computer Science and Automation at the Indian Institute of Science



ACM India held its 2017 conference at the Amity Campus, Kolkata, West Bengal.

Bobby Schmebel

in Bangalore. The objective of the summit was to share ideas and explore interesting challenges around the theme of 'Technology for Societal Good.' The forum fostered meaningful discussion among the Indian computer science research community and spirited potential collaborations using technology to address societal challenges in the country.

Four ACM India Summer Schools were held last year; a total of 240 students participated out of 1,200 applicants.

Goa University hosted the First National Level 24-Hour Hackathon for Women organized by ACM-W India and Oracle Academy. The aim of the September 2016 event was to provide an impetus to women students to take part and display their innovation and coding skills.

ACM-W India Celebration of Women in Computing was held at the University of Petroleum and Energy Studies Dehradun, Uttarakhand, India. The popular event offered a unique opportunity for women students and professionals in the field to interact with experts and peers and to showcase works-in-progress.

... ACM China Council

ACM hosted a Turing 50th celebration in Shanghai last May, bringing together several Turing Laureates for outstanding panel discussions. Nine SIG symposia were also held along with the 50th festivities.

The inaugural Ceremony and Academic Symposium for China's SIGCSE chapter introduced the blueprint for the chapter, which is to develop the world's cutting-edge computer education scientific research in China with international impact as well as create more opportunities for collaboration among computing educators.



The ACM Turing 50th Celebration Conference—China was held in Shanghai in May.

Conferences

ACM celebrated 50 years of the A.M. Turing Award with a two-day conference in San Francisco. This milestone event was designed to highlight the significant impact of the contributions of the Turing Laureates on computing and society. Twenty-three Turing Laureates attended the conference, some taking part in panel discussions or delivering talks. Fifteen ACM SIGs sponsored the conference, and funded 110 student scholars to attend the event, enabling them to interact with Turing Laureates throughout the course of the conference. Corporate sponsors included Google, Microsoft, Amazon, Oracle and IBM. Facebook served as Broadcast Partner.

SC16—the ACM/IEEE International Conference for High Performance Computing, Networking, Data Storage Analysis—continues to attract internationally known experts to the world’s largest supercomputing exhibition and technical event. This year’s conference presented the latest HPC technologies and accomplishments from more than 350 of the world’s leading vendors, research organizations, and universities.

KDD 2016, ACM’s Conference on Knowledge Discovery and Data Mining, hosted leaders from Amazon, Facebook, Google, IBM, LinkedIn, as well as major universities worldwide. This year’s event presented top researchers and practitioners with the ability to explore opportunities to leverage data science in socially relevant areas such as security, geotargeting, public health, medicine, urbanization, climate change and geopolitical disparity.

ACM’s Turing laureates and 200 ACM-sponsored students were on hand for the fourth annual Heidelberg Laureate Forum. This high-profile weeklong event allows selected students to meet industry icons and prestigious award recipients and to share scientific inspiration.



The Game of Light platform at CHI 2017.



Misti Layne

ACM was honored to host many Turing Laureates at the award's landmark celebration.



Bobby Schnabel

1974 Turing winner Donald Knuth at Turing at 50 conference.



SC16 drew a record audience.



The Experience Hall at SIGGRAPH 2016.

Recognition

Sir Tim Berners-Lee was named the recipient of the 2016 ACM A.M. Turing Award. He was cited for inventing the World Wide Web, the first Web browser, and the fundamental protocols and algorithms allowing the Web to scale.

The ACM Fellows program recognized 53 members for their major contributions to CS, artificial intelligence, cryptography, computer architecture, high performance computing, and programming languages.

ACM also named 45 new Distinguished Members, of which there were 4 Distinguished Educators, 9 Distinguished Engineers, and 32 Distinguished Scientists.

ACM-W welcomed 30 new chapters and hosted over 25 Celebrations of Women in Computing events worldwide over the fiscal year. Indeed, the number celebrations of women in the field almost doubled that of last FY.

The ACM-Infosys Foundation Award in the Computing Sciences was renamed in November 2016 to the ACM Prize in Computing. Infosys will continue to fund the award, established in 2007 to recognize computing professionals in the early to middle stages of their careers. In conjunction with the renaming of the award, the corresponding cash prize has been increased to \$250,000.

The ACM History Committee fosters collection, preservation, and interpretation of the history of ACM and its role in the development of computing. Progress continued on the committee's three-year project to video oral histories for Turing Award recipients. Since its onset in 2015, the Turing Oral History Project has curated 22 videos, either conducted by the HC team or obtained from public domain sources.

ACM's Professional Ethics Committee is exploring ways to develop tools to help ACM members in particular, and the computing community in general, be mindful of professional computing ethics and how those principles can be applied. The committee's Integrity Project is working to produce webinars, videos, and podcasts for use in schools and industry.



2016 ACM A.M. Turing Award winner Sir Tim Berners-Lee.

Misti Layne



Misti Layne

ACM's Annual Award's Banquet, June 2017.



Misti Layne

2016 ACM Fellows.

ACM AWARD RECIPIENTS

A.M. Turing Award
Sir Tim Berners-Lee

ACM Prize in Computing
Alexei A. Efros

ACM-AAAI Allen Newell Award
Jitendra Malik

Grace Murray Hopper Award
Jeffrey Heer

Software System Award
Andrew File System (AFS)
John H. Howard,
Michael L. Kazar, David A. Nichols, Sherri M. Nichols, Mahadev

Satyanarayanan,
Robert N. Sidebotham,
Alfred Z. Spector,
Michael J. West

Karl V. Karlstrom Outstanding Educator Award
Owen Astrachan
Paris Kanellakis Theory and Practice Award
Amos Fiat, Moni Naor

Eugene L. Lawler Award for Humanitarian Contributions within Computer Science and Informatics
Ken Banks

Distinguished Service Award
Leonard J. Shustek

ACM Athena Lecturer Award
Lydia E. Kavradi

Outstanding Contribution to ACM Award
Valerie Barr

ACM Presidential Award
Moshe Y. Vardi

2017 ACM-IEEE CS Eckert-Mauchly Award
Charles P. "Chuck" Thacker

2016 ACM-IEEE CS Ken Kennedy Award
William D. Gropp

Doctoral Dissertation Award
Haitham Hassanieh

Honorable Mention
Peter Bailis
Veselin Raychev

ACM India Doctoral Dissertation Award
Gurjar Rohit

Honorable Mention
Nagendra Gulu

ACM China Doctoral Dissertation Award
Fu Luoyi, Shu Yianchao

ACM China Rising Star Award
Sang Jitao, Cheng Mingming

ACM/CSTA Cutler-Bell Prize in High School Computing
Elizabeth Hu, Avi Swartz, Aaron Walter

2017 SIAM-ACM Prize in Computational Science and Engineering
Thomas J.R. Hughes

ACM-IEEE CS George Michael Memorial Fellowships
Johan Rudi, Axel Huebl

Statement of Activities: Year ended June 30, 2017 (in Thousands)

REVENUE	Unrestricted Net Assets	Temporarily Restricted Net Assets	Total
Membership dues	\$7,282		\$7,282
Publications	21,599		21,599
Conferences and other meetings	29,058		29,058
Interests and dividends	2,067		2,067
Net appreciation of investments	5,608		5,608
Contributions and grants	6,054	\$2,516	8,570
Other revenue	216		216
Net assets released from restrictions	2,800	(2,800)	0
Total Revenue	74,684	(284)	74,400
EXPENSES			
Program:			
Membership processing and services	\$937		\$937
Publications	10,809		10,809
Conferences and other meetings	27,325		27,325
Program support and other	13,603		13,603
Total	52,674		52,674
Supporting services:			
General administration	12,332		12,332
Marketing	852		852
Total	13,184		13,184
Total expenses	65,858		65,858
Increase (decrease) in net assets	8,826	(284)	8,542
Net assets at the beginning of the year	98,508	8,839	107,347
Net assets at the end of the year	\$107,334	\$8,555	\$115,889*

* Includes SIG Fund balance of \$50,271K

Balance Sheet: June 30, 2017 (in Thousands)

ASSETS

Cash and cash equivalents	\$40,936
Investments	103,198
Accounts receivable and other current assets	7,429
Deferred conference expenses and other assets	9,570
Fixed assets, net of accumulated depreciation and amortization	588
Total Assets	\$161,721

LIABILITIES AND NET ASSETS

Liabilities:

Accounts payable, accrued expenses, and other liabilities	\$17,815
Unearned conference, membership, and subscription revenue	28,017
Total liabilities	\$45,832

Net assets:

Unrestricted	107,334
Temporarily restricted	8,555
Total net assets	115,889
Total liabilities and net assets	\$161,721

Optional Contributions Fund — Program Expense (\$000)

Education Board accreditation	\$95
USACM Committee	20
Total expenses	\$115



Special Interest Groups

- SIGACCESS** Special Interest Group on Accessibility and Computing
- SIGACT** Special Interest Group on Algorithms & Computation Theory
- SIGAI** Special Interest Group on Artificial Intelligence
- SIGAPP** Special Interest Group on Applied Computing
- SIGARCH** Special Interest Group on Computer Architecture
- SIGAda** Special Interest Group on Ada Programming Language
- SIGBED** Special Interest Group on Embedded Systems
- SIGBio** Special Interest Group on Bioinformatics, Computational Biology
- SIGCAS** Special Interest Group on Computers and Society
- SIGCHI** Special Interest Group on Computer-Human Interaction
- SIGCOMM** Special Interest Group on Data Communication
- SIGCSE** Special Interest Group on Computer Science Education
- SIGDA** Special Interest Group on Design Automation
- SIGDOC** Special Interest Group on Design of Communication
- SIGECOM** Special Interest Group on Electronic Commerce
- SIGEVO** Special Interest Group on Genetic and Evolutionary Computation
- SIGGRAPH** Special Interest Group on Computer Graphics
- SIGHPC** Special Interest Group on High Performance Computing
- SIGIR** Special Interest Group on Information Retrieval
- SIGITE** Special Interest Group on Information Technology Education
- SIGKDD** Special Interest Group on Knowledge Discovery in Data
- SIGLOG** Special Interest Group on Logic and Computation
- SIGMETRICS** Special Interest Group on Measurement and Evaluation
- SIGMICRO** Special Interest Group on Microarchitecture
- SIGMIS** Special Interest Group on Management Information Systems
- SIGMM** Special Interest Group on Multimedia Systems
- SIGMOBILE** Special Interest Group on Mobility of Systems, Users, Data and Computing
- SIGMOD** Special Interest Group on Management of Data
- SIGOPS** Special Interest Group on Operating Systems
- SIGPLAN** Special Interest Group on Programming Languages
- SIGSAC** Special Interest Group on Security, Audit and Control
- SIGSAM** Special Interest Group on Symbolic & Algebraic Manipulation
- SIGSIM** Special Interest Group on Simulation
- SIGSOFT** Special Interest Group on Software Engineering
- SIGSPATIAL** Special Interest Group on Spatial Information
- SIGUCCS** Special Interest Group on University & College Computing Services
- SIGWEB** Special Interest Group on Hypertext, Hypermedia and Web



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