Association for Computing Machinery

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The **Association for Computing Machinery** (**ACM**) is an international learned society for computing. It was founded in 1947 and is the world's largest[1] scientific and educational computing society. It is a not-for-profit professional membership group.[2] Its membership is more than 100,000 as of 2011. Its headquarters are in New York City.

The ACM is an umbrella organization for academic and scholarly interests in computer science. Its motto is "Advancing Computing as a Science & Profession".

Association for Computing Machinery	
Formation	1947
Type	501(c)(3) not-for-profit membership corporation
Headquarters	2 Pennsylvania Plaza New York City
Membership	100,000
President	Vicki L. Hanson
Website	acm.org (http://acm.org)

Contents

Activities

ACM is organized into over 171 local chapters and 37 Special Interest Groups (SIGs), through which it conducts most of its activities. Additionally, there are over 500 college and university chapters. The first student chapter was founded in 1961 at the University of Louisiana at Lafayette.

Many of the SIGs, such as SIGGRAPH, SIGPLAN, SIGCSE and SIGCOMM, sponsor regular conferences, which have become famous as the dominant venue for presenting innovations in certain fields. The groups also publish a large number of specialized journals, magazines, and newsletters.

ACM also sponsors other computer science related events such as the worldwide ACM International Collegiate Programming Contest (ICPC), and has sponsored some other events such as the chess match between Garry Kasparov and the IBM Deep Blue computer.

Two Penn Plaza site of the ACM headquarters in New York City

Services

Publications

ACM publishes over 50 journals[3] including the prestigious[4] *Journal of the ACM*, and two general magazines for computer professionals, *Communications of the ACM* (also known as *Communications* or *CACM*) and *Queue*. Other publications of the ACM include:

- *ACM XRDS*, formerly "Crossroads", was redesigned in 2010 and is the most popular student computing magazine in the US.
- *ACM Interactions*, an interdisciplinary HCI publication focused on the connections between experiences, people and technology, and the third largest ACM publication.[5]
- *ACM Computing Surveys* (CSUR)
- *ACM Computers in Entertainment* (CIE)
- A number of journals, specific to subfields of computer science, titled *ACM Transactions*. Some of the more notable transactions include:
    - *ACM Transactions on Computer Systems* (TOCS)
    - *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (TCBB)
    - *ACM Transactions on Computational Logic* (TOCL)
    - *ACM Transactions on Computer-Human Interaction* (TOCHI)
    - *ACM Transactions on Database Systems* (TODS)
    - *ACM Transactions on Graphics* (TOG)
    - *ACM Transactions on Mathematical Software* (TOMS)
    - *ACM Transactions on Multimedia Computing, Communications, and Applications* (TOMM)
    - *IEEE/ACM Transactions on Networking* (TON)
    - *ACM Transactions on Programming Languages and Systems* (TOPLAS)

Although *Communications* no longer publishes primary research, and is not considered a prestigious venue, many of the great debates and results in computing history have been published in its pages.

ACM has made almost all of its publications available to paid subscribers online at its Digital Library and also has a Guide to Computing Literature. Individual members additionally have access to Safari Books Online and Books24x7. ACM also offers insurance, online courses, and other services to its members.

In 1997, ACM Press published *Wizards and Their Wonders: Portraits in Computing* (ISBN 0897919602), written by Christopher Morgan, with new photographs by Louis Fabian Bachrach. The book is a collection of historic and current portrait photographs of figures

from the computer industry.

Portal and Digital Library

The **ACM Portal** is an online service of the ACM.[6] Its core are two main sections: **ACM Digital Library** and the **ACM Guide to Computing Literature**.[7]

The ACM Digital Library is the full-text collection of all articles published by the ACM in its articles, magazines and conference proceedings. The Guide is a bibliography in computing with over one million entries.[6] The ACM Digital Library contains a comprehensive archive starting in the 1950s of the organization's journals, magazines, newsletters and conference proceedings. Online services include a forum called Ubiquity and Tech News digest. There is an extensive underlying bibliographic database containing key works of all genres from all major publishers of computing literature. This secondary database is a rich discovery service known as The ACM Guide to Computing Literature.

ACM adopted a hybrid Open Access (OA) publishing model in 2013. Authors who do not choose to pay the OA fee must grant ACM publishing rights by either a copyright transfer agreement or a publishing license agreement.[8]

ACM was a "green" publisher before the term was invented. Authors may post documents on their own websites and in their institutional repositories with a link back to the ACM Digital Library's permanently maintained Version of Record.

All metadata in the Digital Library is open to the world, including abstracts, linked references and citing works, citation and usage statistics, as well as all functionality and services. Other than the free articles, the full-texts are accessed by subscription.

There is also a mounting challenge to the ACM's publication practices coming from the open access movement. Some authors see a centralized peer–review process as less relevant and publish on their home pages or on unreviewed sites like arXiv. Other organizations have sprung up which do their peer review entirely free and online, such as Journal of Artificial Intelligence Research (JAIR), Journal of Machine Learning Research (JMLR) and the Journal of Research and Practice in Information Technology.

Membership grades

In addition to student and regular members, ACM has several advanced membership grades to recognize those with multiple years of membership and "demonstrated performance that sets them apart from their peers".[9]

Fellows

The ACM Fellows Program was established by Council of the Association for Computing Machinery in 1993 "to recognize and honor outstanding ACM members for their achievements in computer science and information technology and for their significant contributions to the mission of the ACM." There are presently about 958 Fellows[10] out of about 75,000 professional members.

Distinguished Members

In 2006 ACM began recognizing two additional membership grades, one which was called Distinguished Members. Distinguished Members (Distinguished Engineers, Distinguished Scientists, and Distinguished Educators) have at least 15 years of professional experience and 5 years of continuous ACM membership and "have made a significant impact on the computing field". Note that in 2006 when the Distinguished Members first came out, one of the three levels was called "Distinguished Member" and was changed about two years later to "Distinguished Educator". Those who already had the Distinguished Member title had their titles changed to one of the other three titles.

Senior Members

Also in 2006, ACM began recognizing Senior Members. Senior Members have ten or more years of professional experience and 5 years of continuous ACM membership.

Chapters

ACM has three kinds of chapters: Special Interest Groups,[11] Professional Chapters, and Student Chapters.[12]

As of 2011, ACM has professional & SIG Chapters in 56 countries.[13]

As of 2014, there exist ACM student chapters in 41 different countries.[14]

Special Interest Groups

- SIGACCESS: Accessible Computing
- SIGACT: Algorithms and Computation Theory
- SIGAda: Ada Programming Language
- SIGAI: Artificial Intelligence
- SIGAPP: Applied Computing
- SIGARCH: Computer Architecture
- SIGBED: Embedded Systems
- SIGBio: Bioinformatics
- SIGCAS: Computers and Society
- SIGCHI: Computer–Human Interaction
- SIGCOMM: Data Communication
- SIGCSE: Computer Science Education
- SIGDA: Design Automation
- SIGDOC: Design of Communication
- SIGecom: Electronic Commerce
- SIGEVO: Genetic and Evolutionary Computation
- SIGGRAPH: Computer Graphics and Interactive Techniques
- SIGHPC: High Performance Computing
- SIGIR: Information Retrieval
- SIGITE: Information Technology Education
- SIGKDD: Knowledge Discovery and Data Mining
- SIGLOG: Logic and Computation[15]
- SIGMETRICS: Measurement and Evaluation
- SIGMICRO: Microarchitecture
- SIGMIS: Management Information Systems
- SIGMM: Multimedia

- SIGMOBILE: Mobility of Systems, Users, Data and Computing
- SIGMOD: Management of Data
- SIGOPS: Operating Systems
- SIGPLAN: Programming Languages
- SIGSAC: Security, Audit, and Control
- SIGSAM: Symbolic and Algebraic Manipulation
- SIGSIM: Simulation and Modeling
- SIGSOFT: Software Engineering
- SIGSPATIAL: Spatial Information
- SIGUCCS: University and College Computing Services
- SIGWEB: Hypertext, Hypermedia, and Web

Conferences

ACM and its Special Interest Groups (SIGs) sponsors numerous conferences with 170 hosted worldwide in 2017. ACM Conferences page (http://www.acm.org/conferences) has an up-to-date complete list while a partial list is shown below. Most of the SIGs also have an annual conference. ACM conferences are often very popular publishing venues and are therefore very competitive. For example, the 2007 SIGGRAPH conference attracted about 30000 visitors, and CIKM only accepted 15% of the long papers that were submitted in 2005.

- ASPLOS: International Conference on Architectural Support for Programming Languages and Operating Systems
- CHI: Conference on Human Factors in Computing Systems
- SIGCSE: SIGCSE Technical Symposium on Computer Science Education
- CIKM: Conference on Information and Knowledge Management[16]
- DAC: Design Automation Conference
- DEBS: Distributed Event Based Systems[17]
- FCRC: Federated Computing Research Conference
- GECCO: Genetic and Evolutionary Computation Conference[18]
- SC: Supercomputing Conference
- SIGGRAPH: International Conference on Computer Graphics and Interactive Techniques
- Hypertext: Conference on Hypertext and Hypermedia[19]
- JCDL: Joint Conference on Digital Libraries[20]
- TAPIA: Richard Tapia Celebration of Diversity in Computing Conference
- SIGCOMM: ACM SIGCOMM Conference

- MobiHoc: International Symposium on Mobile Ad Hoc Networking and Computing

The ACM is a co–presenter and founding partner of the Grace Hopper Celebration of Women in Computing (GHC) with the Anita Borg Institute for Women and Technology.[21]

There are some conferences hosted by ACM student branches; this includes Reflections Projections, which is hosted by UIUC ACM. . In addition, ACM sponsors regional conferences. Regional conferences facilitate increased opportunities for collaboration between nearby institutions and they are well attended.

For additional non-ACM conferences, see this list of computer science conferences.

Awards

The ACM presents or co–presents a number of awards for outstanding technical and professional achievements and contributions in computer science and information technology.[22][23][24]

- ACM A. M. Turing Award
- ACM – AAAI Allen Newell Award
- ACM Athena Lecturer Award
- ACM/CSTA Cutler-Bell Prize in High School Computing
- ACM Distinguished Service Award
- ACM Doctoral Dissertation Award[25]
- ACM Eugene L. Lawler Award
- ACM Fellowship, awarded annually since 1993[26]
- ACM Gordon Bell Prize
- ACM Grace Murray Hopper Award
- ACM – IEEE CS George Michael Memorial HPC Fellowships
- ACM – IEEE CS Ken Kennedy Award
- ACM – IEEE Eckert-Mauchly Award
- ACM India Doctoral Dissertation Award
- ACM Karl V. Karlstrom Outstanding Educator Award
- ACM Paris Kanellakis Theory and Practice Award
- ACM Policy Award
- ACM Presidential Award
- ACM Prize in Computing (formerly: ACM – Infosys Foundation Award in the Computing Sciences)
- ACM Programming Systems and Languages Paper Award
- ACM Student Research Competition
- ACM Software System Award
- International Science and Engineering Fair
- Outstanding Contribution to ACM Award
- SIAM/ACM Prize in Computational Science and Engineering

Over 30 of ACM's Special Interest Groups also award individuals for their contributions with a few listed below.[27]

- ACM Alan D. Berenbaum Distinguished Service Award
- ACM Maurice Wilkes Award
- ISCA Influential Paper Award

Leadership

The President of ACM for 2016–2018 is Vicki L. Hanson, Distinguished Professor in the Department of Information Sciences and Technologies at the Rochester Institute of Technology and Professor and Chair of Inclusive Technologies at the University of Dundee, UK. She is successor of Alexander L. Wolf (2014–2016), Dean of the Jack Baskin School of Engineering at the University of California, Santa Cruz; Vint Cerf (2012–2014), an American computer scientist who is recognized as one of "the fathers of the Internet"; Alain Chesnais

(2010–2012), a French citizen living in Toronto, Ontario, Canada, where he runs his company named Visual Transitions; and Dame Wendy Hall of the University of Southampton, UK (2008–2010).[28]

ACM is led by a Council consisting of the President, Vice-President, Treasurer, Past President, SIG Governing Board Chair, Publications Board Chair, three representatives of the SIG Governing Board, and seven Members–At–Large. This institution is often referred to simply as "Council" in *Communications of the ACM*.

Infrastructure

ACM has five "Boards" that make up various committees and subgroups, to help Headquarters staff maintain quality services and products. These boards are as follows:

1. Publications Board
2. SIG Governing Board
3. Education Board
4. Membership Services Board
5. Practitioners Board

ACM Council on Women in Computing

ACM-W,[29] the ACM council on women in computing, supports, celebrates, and advocates internationally for the full engagement of women in computing. ACM–W's main programs are regional celebrations of women in computing, ACM-W chapters, and scholarships for women CS students to attend research conferences. In India and Europe these activities are overseen by ACM-W India and ACM-W Europe respectively. ACM-W collaborates with organizations such as the Anita Borg Institute, the National Center for Women and IT, CRA-W.

Athena Lectures

The ACM-W gives an annual Athena Lecturer Award to honor outstanding women researchers who have made fundamental contributions to computer science.[30] This program began in 2006. Speakers are nominated by SIG officers.[31]

- 2006–2007: Deborah Estrin of UCLA
- 2007–2008: Karen Spärck Jones of Cambridge University
- 2008–2009: Shafi Goldwasser of MIT and the Weitzmann Institute of Science
- 2009–2010: Susan Eggers of the University of Washington
- 2010–2011: Mary Jane Irwin of the Pennsylvania State University
- 2011–2012: Judith S. Olson of the University of California, Irvine
- 2012–2013: Nancy Lynch of MIT
- 2013–2014: Katherine Yelick of LBNL[32]
- 2014–2015: Susan Dumais of Microsoft Research
- 2015–2016: Jennifer Widom of Stanford University
- 2016–2017: Jennifer Rexford of Princeton University

Cooperation

ACM's primary partner has been the IEEE Computer Society (IEEE-CS), which is the largest subgroup of the Institute of Electrical and Electronics Engineers (IEEE). The IEEE focuses more on hardware and standardization issues than theoretical computer science, but there is considerable overlap with ACM's agenda. They have many joint activities including conferences, publications and awards.[33] ACM and its SIGs co-sponsor about 20 conferences each year with IEEE-CS and other parts of IEEE.[34] Eckert-Mauchly Award and Ken Kennedy Award, both major awards in computer science, are given jointly by ACM and the IEEE-CS.[35] They occasionally cooperate on projects like developing computing curricula.[36]

ACM has also jointly sponsored on events with other professional organizations like the Society for Industrial and Applied Mathematics (SIAM).[37]

See also

- ACM Classification Scheme
- Computer science
- Computing
- List of Fellows of the Association for Computing Machinery
- Grace Murray Hopper Award
- Presidents of the Association for Computing Machinery
- Timeline of computing 2400 BC–1949
- Turing Award
- Franz Alt, former president
- Edmund Berkeley, co–founder
- Bernard Galler, former president

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External links

- Official website (http://www.acm.org/)
- ACM portal (http://portal.acm.org/) for publications
- ACM Digital Library (http://portal.acm.org/dl.cfm)
- Association for Computing Machinery Records, 1947-2009 (http://purl.umn.edu/51982), Charles Babbage Institute, University of Minnesota.

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