NEWS RELEASE

CONTACT: Jim Ormond
                212-626-0505
                ormond@hq.acm.org

Surging Demand and New Approaches Transform Computer Science Education

**ACM SIGCSE, World's Largest Computing Education Conference,
Presents Leading-Edge Research**

New York, NY, February 15, 2017 – In just the last few years, demand for computer science education at all levels has skyrocketed. Beyond catching up with increasing enrollments, educators have been challenged to introduce new curricula in order to prepare students for the computing jobs of tomorrow. At the same time, other pressing issues such as how to attract more women and underrepresented minorities to the field have also taken center stage. To present leading-edge research in all aspects of computing education in K-12 and higher education, the Association for Computing Machinery's (ACM) Special Interest Group on Computer Science Education (SIGCSE) will hold its annual SIGCSE Technical Symposium in Seattle on March 8-11, 2017. With more than 1,300 researchers and educators expected to attend this year's gathering, the SIGCSE Symposium is recognized the world's largest computing education conference.

"Being involved in computer science education in 2017 is like exploring an undiscovered region," explains SIGCSE Symposium Co-chair Stephen Edwards. "As educators and researchers, we have the unique opportunity to introduce entirely new curricula and pedagogies. SIGCSE is essential because it allows each of us to learn which approaches have worked with our peers. In attending the symposium we are introduced to new ideas, see ways to improve our practices and learn about the trends that will shape the field in the near term."

Adds SIGCSE Symposium Co-Chair Michael Caspersen, "The program for this year's symposium reflects the pulse of the field. For example, SIGCSE 2017 addresses the growth of cybersecurity and data science education as emerging disciplines in their own right. We are also excited that Jeanette Wing will be delivering an opening keynote address. Wing laid the groundwork for the idea of computational thinking 10 years ago. Today, computational thinking is the foundation of our community's conviction that all students are enriched by participation in computer science education, whether or not they ultimately decide to pursue a career in this field."

Presentations will include research tailored to higher education, K-12/novice learners, diversity topics, advanced topics, and learning/instructional styles.

<u>SIGCSE 2017 session highlights include:</u>

- *What are the essentials cybersecurity majors should learn?*

"Seeking Global, Industry, and Training Provider Perspectives to Inform the ACM Joint Task Force on Cybersecurity Education"
Cybersecurity is a relatively new field that is growing in many directions. The ACM Joint Task Force on Cybersecurity Education is in the process of developing curriculum standards for undergraduate college students. The community will offer perspectives on "What are the essentials cybersecurity majors should learn?"

- *Learning How to Make Computing "Wearable"*
  "A Modern Wearable Devices Course for Computer Science Undergraduates"
  Wearable devices are becoming hot commodities in the consumer electronics field. A problem that many tech companies face today is that many computer science students entering the workforce lack fundamental skills for understanding the entire process of a system that is not solely software. The presenters will discuss a wearable devices course they have developed that, among other elements, introduces students to the intricacies of the production of wearable electronic devices.

- *Can Data Science Be Taught to Young Learners?*
  "Introducing Data Science to School Kids"
  Within computing science education, the specialization of data science is often introduced at the university level. Data-driven decision making is fast becoming a necessary skill in jobs across the board. The industry today uses analytics and machine learning to get useful insights from a wealth of digital information in order to make decisions. With data science becoming an important skill needed in varying degrees of complexity by the workforce of the near future, the presenters have developed an approach to expose K-12 school-goers to its power.

- *Stopping Terrorists from Using Drones*
  "Identifying and Exploiting Vulnerabilities in Civilian Unmanned Aerial Vehicle Systems and Evaluating and Countering Potential Threats against the United States Airspace."
  This research project investigates the vulnerabilities of civilian Unmanned Aerial Vehicles (UAV) systems and how they can be exploited by law enforcement should a UAV be utilized in a terrorist attack against the United States. By combining research from both computer science and political science disciplines, this paper identifies the threats that UAVs pose to the United States, while providing a reliable and safe way to counter certain UAV threat scenarios.

- *Predicting How Many Accepted Students Will Enroll at a University: Can AI Help?*
  "Applying Machine Learning to Predict Davidson College's Admissions Yield"
  This project attempted to find a solution to the problem of declining yield rates at colleges and universities around the nation. Yield rate, the rate at which accepted students decide to enroll at a given school, is important to a school for academic, economic and logistical reasons. Using these techniques, a model was created that predicted applicants' yield decisions with 86% accuracy.

- *Are the Arts the Key to Attracting More Women and Minority Students to CS?*
  "Computing in the Arts: Curricular Innovations and Results"
  Computing in the Arts (CITA) is an innovative, interdisciplinary curriculum model which integrates computer science and information technology with traditional art theory and practice.

At the College of Charleston, implementation of an undergraduate CITA degree program resulted in an increase in the number of female and minority students pursuing computing-related degrees. In this session, researchers will present some of these results and invite audience participation in an attempt to reach new collaborators, generate new ideas, and continue to grow the CITA community across the US and abroad.

- ***What Have Been the Best Approaches around the World to Broaden Participation in CSED?*** **"Broadening Participation in Computer Science: Key Strategies from International Findings"**
  This special session aims to inform key stakeholders about international best practices for broadening participation and diversity in computer science, and provides opportunities for the audience to contribute to this research discussion and to analyze and develop strategies for their own unique contexts, in a facilitated approach using the research framework and key findings.

SIGCSE 2017 takes place in Seattle, Washington from March 8 – March 11, 2017. For more information, including a full conference program, please visit: http://sigcse2017.sigcse.org.

About the SIGCSE Technical Symposium
The SIGCSE Technical Symposium is SIGCSE's flagship conference. It has been held annually in February or March in the United States since 1970. Attendance regularly exceeds 1,200. The symposium provides a diverse selection of technical sessions and opportunities for learning and interaction.

About SIGCSE
The Special Interest Group on Computer Science Education of the Association for Computing Machinery (ACM SIGCSE) is a community of approximately 2,600 people who, in addition to their specialization within computing, have a strong interest in the quality of computing education. SIGCSE provides a forum for educators to discuss the problems concerned with the development, implementation, and/or evaluation of computing programs, curricula, and courses, as well as syllabi, laboratories, and other elements of teaching and pedagogy.

About ACM
ACM, the Association for Computing Machinery (www.acm.org)**,** is the world's largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development and professional networking.

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