# csta Voice

**BUILDING COMMUNITY**

## The Voice of K–12 Computer Science Education and its Educators

### IN THE NEXT ISSUE OF THE VOICE

Keeping CS Relevant

## CS & IT Symposium "Best Ever"

**Chris Stephenson**

This year's attendees ranked the CSTA annual Computer Science & Information Technology (CS & IT) Symposium in Washington, D.C., one of the most important and successful professional development events they have attended all year.

The 2009 CS & IT Symposium, held June 27 just prior to the National Educational Computing Conference (NECC), featured 22 sessions on a variety of topics including rethinking cultural and material contexts for computer science (CS), computational thinking, partnering with local colleges to get grants, public policy and advocacy, transitioning from Alice to Java, building effective leadership at the grass-roots level, Web design, and Adobe Flash.

Teachers came from across the U.S. and Canada and from as far away as Brazil and New Zealand to connect with their peers, share ideas, explore new interest areas, and learn new and better ways to engage all students in computing. Comments shared by the attendees on their conference evaluation forms included:

- "This is the best professional development opportunity all year! I look forward to this symposium all year long."
- "This was a fantastic day of professional development with wonderful opportunities for networking with other teachers and outstanding presentations."
- "There are so many dynamic people at the symposium! I will see you next year."

"The CSTA annual symposium is one of the most important events that CSTA does all year," said CSTA President Michelle Hutton, "and this year we even had to close registration early because we had reached our capacity of 200 attendees."

Researchers and educators Jane Margolis and Joanna Goode began the day with a powerful discussion of their research on why so few African-American,

> "The CSTA annual symposium is one of the most important events that CSTA does all year,"

Latino/a, and female high school students are learning CS. Their study of CS education reveals how inequality is reproduced in this country, despite the national hope and wish for technology to be a great equalizer.

Closing keynote speaker Debra Richardson, from the Donald Bren School of ICS at the University of California-Irvine, summed up many of the messages heard in sessions throughout the day regarding the importance of bridging the divide between K-12 and higher education so that we can work together to address the three-part divide—Knowledge, Information, and Digital.

All of the presentations from the conference, as well video of the opening and closing keynotes, are available at *www. csitsymposium.org*. The CSTA annual Computer Science & Information Technology Symposium was generously sponsored by Google, Intel, and Microsoft Research.

# Debut of Level I Objectives and Outlines Document

*A Model Curriculum for K–12 CS*

**Anita Verno**

It's finally here! The CSTA Curriculum Committee Level I Task Force is pleased to announce the publication of the Objectives and Outlines document for the K-8 Computer Science (CS) curriculum.

A comprehensive curriculum for the Level I course recommended in ACM's *A Model Curriculum for K–12 Computer Science* is now available at csta.acm.org/Curriculum/sub/Implementation.html.

The document, titled *Level I Objectives and Outlines*, is the culmination of over two years of work by the Level I Task Force, the CSTA Curriculum Committee, and many contributors. Thank you to everyone who reviewed the draft and provided comments. Your feedback was invaluable.

The *Model Curriculum* was originally published in 2003 to provide a framework from which K-12 CS curricula could be developed. A second edition of the *Model Curriculum* was published in 2006. It outlines 4 levels of computer instruction:

- **Level I** (recommended for grades K–8) provides elementary school students with foundational concepts in CS by integrating basic skills in technology with simple ideas about algorithmic thinking.
- **Level II** (recommended for grade 9 or 10) helps students acquire a coherent and broad understanding of the principles, methodologies, and applications of CS in the modern world.
- **Level III** (recommended for grades 10 or 11) is an elective course that permits students to explore their interest and aptitude for CS as a profession.
- **Level IV** (recommended for grade 11 or 12) is an elective course that provides depth of study in one particular area of CS in the form of projects, certification, or AP courses.

The *Model Curriculum* provides a broad vision of computer education. Every curriculum needs details; therefore, implementation documents were needed to help clarify the vision provided. The *Level II Objectives and Outcomes* document was

> The "Background Information" section is a brief survey of the topic, concentrating on aspects relevant to grades K–8.

completed in 2004, the *Level III Objectives and Outcomes* document in 2007, and the *Level I Objectives and Outcomes* document in July 2009.

The Level I Objectives and Outcomes document contains 12 major topics. Each topic has several subsections. The "Topic Description" provides a high-level overview of the topic's major themes. The "Background Information" section is a brief survey of the topic, concentrating on aspects relevant to grades K–8. "Materials and Supplies" alerts the teacher to any special requirements for the topic.

The "Student Learning Objectives" and the linked "Focus Areas and Sample

Activities" are the heart of the *Level I Objectives and Outcomes*. They are divided into grade ranges K–2, 3–5, and 6–8, with the material in each range reflecting the unique maturity and intellectual capacities of the students. Our intention is that, over time, teachers will modify or replace the sample activities with activities that best meet the needs of their individual classrooms. The CSTA Source Web repository contains educational resources (lesson plans, assess-ments, teaching tips, etc.) that are cross-referenced to the Level I topics.

Your help is still needed to make the *Level I Objectives and Outlines* document the most effective guide possible. If you teach the Level I concepts, please share your lesson plans by submitting them to the CSTA Source Web repository (*csta.acm.org/WebRepository/WebRepository.html*).

HEAR MORE FROM ANITA VERNO IN THE CSTA CS SNIPITS PODCASTS.

# Building Community Partnerships

**Alfred Thompson**

Schools and businesses need each other today more than ever. Businesses need well trained, creative, and adaptable workers in the work force. Schools need help preparing students for careers and creating lifelong learners. It seems natural that they would work together towards common goals, but that doesn't take place as often as it might. Communication is truly the key to opening the doors.

For computer science (CS) educators, partnerships with business and industry can potentially help in several ways: people, software, and hardware.

People from business and industry are generally eager to visit schools and host student field trips. Many are enthusiastic evangelists for their career fields; they love what they do and are happy to share their excitement with students. A classroom visit from an industry professional can be a motivating influence on students. While the messages from a professional might be very similar to those from the teacher, students tend to take the messages from guests more seriously. It's a great way to reinforce classroom discussions and to enhance teacher credibility.

Field trips can have even more impact. In a professional environment, students will see computing careers first-hand and in action. Hearing professionals explain onsite their work and their career path can motivate students to study, pursue educational opportunities, and be able to envision themselves in these careers one day.

Software development companies have an interest in seeing students learn how to use their applications. Knowing the limitations of school budgets, many companies have programs to provide software for academic use at little to no cost. At Microsoft, for example, we offer the MSDN Academic Alliance program (*msdnaa.net*) to make the latest Microsoft developer and designer software available in labs, classrooms, and on student PCs. The DreamSpark program (*dreamspark.com*) provides free developer and designer software to high school and college students. High schools must register before students can access the free downloads. The Faculty Connection (*www.microsoft.com/facultyconnection/precollegiate*)

> Often companies don't even realize that what they are doing is of interest to students.

offers a variety of free curriculum resources. Other companies have similar programs and offers to take advantage of.

Hardware tends to be harder for companies to contribute to schools and often, especially in this economy, the computers that become surplus are older and may not be ideal for school use. However, these computers can allow some schools to increase the computer/student ratio and may be appropriate for some uses.

How do you start a business and school partnership? Often it starts by identifying parents of students in your school who work for potential partners. Invite the parents to visit your classroom and to talk with your students. Inquire about internship programs or hosting a field trip. Often

**BUILDING COMMUNITY PARTNERSHIPS**
*continued from page 3*

companies don't even realize that what they are doing is of interest to students. For example, a professional computer lab may be old hat to the individuals working there, but may be exciting for students to see. Well chaperoned field trips of reasonable size are also more easily handled by many companies than they realize.

You can contact local companies directly. Your interest will usually be reciprocated. Starting a conversation can lead to good things even beyond an occasional guest speaker or field trip. Some companies encourage employees to volunteer as part of their commitment to the local communities and for civic development of their employees. Mentoring students and working with schools also helps employees build interpersonal and leadership skills so companies gain more than just good will.

Investigate your community for potential partnerships. The worst-case scenario is that a business may say, "We can't help you right now or in that way." However, they may suggest other ways to partner, which can be the first steps to building a community partnership. So don't be shy—start the conversation.

HEAR MORE FROM ALFRED THOMPSON IN THE CSTA CS SNIPITS PODCASTS.

## Building a CS Community in Ohio

*The Path to CSTA - Ohio*

**Angie Thorne**

Fellowship and community will be the central foundations for the Computer Science Teachers Association-Ohio, and our 2008-2009 year has been filled with activities designed to build collegial networks and to create our CSTA chapter.

The first steps toward becoming a CSTA chapter occurred in October and November of 2008. We held two meetings in central Ohio. Attendees shared exemplary projects and discussed the future of CS, recruitment strategies, curricular issues, partnership with local businesses, and certification requirements. Fourteen teachers attended at least one of the meetings and represented a diversity of career levels: teachers nearing retirement, a first year teacher, teachers from both public and private schools, a college professor, and a teacher from a high school career center.

A third informal meeting was held in January 2009. Even more teachers attended and discussions focused on funding for programs and labs, student recruitment and retention, cool classroom projects, and course content.

Our advocacy efforts convinced the eTech Ohio Educational Technology Conference organizers that we would bring value to the February conference and they dedicated one of the three conference days for CS projects and initiatives. Several CSTA members presented on topics such as Scratch, robotics, CS Unplugged, and shared projects for an introductory graphical technology course. At the conclusion of the day we held an informal gathering to tell others about the goals of CSTA and

> **We held our first video conference in March 2009 at a site in northern Ohio, joined by a second site in central Ohio.**

recruit new members.

To reduce travel time and expenses our meetings are now held at regional hubs where attendees communicate via video conferencing. We held our first video conference in March 2009 at a site in northern Ohio, joined by a second site in central Ohio. This strategy of having regional hubs makes it easier for everyone to stay connected and become more successfully involved in our activities.

Our group of dedicated educators has now grown to more than 20 CS and IT teachers and professors. We are busy with exciting and important CS education projects and we are well on our way to becoming CSTA - Ohio.

# Life after AP CS AB

*Fill the Gap with Partnerships*

**Barbara Ericson**

As you are likely aware, the College Board will not offer an Advanced Placement Computer Science (AP CS) AB exam in 2010. Some teachers and schools, facing the challenges of providing computing education for their students and compensating for this loss, are creating partnerships with local colleges and universities to ensure learning opportunities in advanced computing.

In some communities, schools are working on agreements with local community colleges or universities to enable students to earn college credit for a high school course containing AB content. In some situations, the high school teacher must have a master's degree in CS to be allowed to teach the for-college-credit course.

Another possibility is to offer an AB content course in conjunction with an online course at a college or university. The Illinois Institute of Technology is

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offering this option. Students will enroll in the online course and access the online lectures, streaming-video, and synchronized slides. The classroom teacher will assist during programming labs and proctor exams. For more information contact Matthew Bauer at *bauerm@iit.edu* and visit *www.iit.edu/csl/cs/announcements/2010_exam_credit.shtml*.

Stuart Reges is offering something similar called "UW in the High School" at the University of Washington and additional information is available at *www.cs.washington.edu/homes/reges/uwhs/*.

Through the AP CS electronic discussion group and during the AP CS exam reading in June, teachers also shared a variety of additional solutions for maintaining an advanced CS course.

Some schools will offer an AB content course as an honors course. They believe that this will still attract students because their grades will be weighted as for an AP course. The flexibility provided will also enable teachers to include topics such as software engineering, graphics, game development, and/or group projects.

Other schools will offer a course with the AB content as a regular computing course which students will take after the AP CS A course. Students' grades may not be weighted as in an AP course but will count as part of a pathway in computing studies.

Some teachers plan to continue to teach the AB topics, but students will take the AP CS A exam. One benefit is that the test should be easier for these students and they may be able to explore additional AB topics after the exam. (In some states, there are six weeks of school remaining after the exam and before the end of the school year.)

While none of the teachers who responded to the inquiry reported that they were considering offering an AB content course as an International Baccalaureate (IB) course, the IB program is considering moving CS into the IB science group which includes physics, chemistry, design technology, environmental systems, and biology. The IB program is also considering allowing for options such as Alice, databases, artificial intelligence, mathematics modeling/simulations, Web science, and creative technologies.

The challenge of providing a high-quality advanced CS course is being met in a variety of creative ways and these possibilities may offer interesting options for other teachers and schools. Sadly, at some schools there will no longer be a CS course because the only CS course that was offered was AP CS AB, and the administration believes that there would be insufficient interest in a non-AP course. In these situations, the teachers who previously taught AP CS AB will teach other subjects or have lost their jobs.

## Meet the Authors

**Carlen Blackstone**
*Emmaus High School, PA*
Carlen has taught CS for 28 years and has participated in ACSL since 1983.

**Barbara Ericson**
*Director Computing Outreach, Georgia Tech*
Barbara has been working to improve computing education in Georgia since 2004. She is on the CSTA Board of Directors and the AP CS Development Committee.

**Stephanie Hoeppner**
*Clermont Northeastern Schools, Batavia, OH*
Stephanie teaches CS and is a member of the CSTA Leadership Cohort.

**Chris Stephenson**
*Executive Director, CSTA*
Chris has been the Executive Director of CSTA since it began in 2005. She joined ACM after 16 years at the University of Toronto's Computer Systems Research Institute and the University of Waterloo's Mathematics and Computing Department, where she designed instructional and professional development resources.

**Leigh Ann Sudol**
*Carnegie Mellon University, PA*
Leigh Ann is earning her Ph.D. in CS Education from Carnegie Mellon University. She has been a high school teacher, robotics coach, and CSTA board member.

**Alfred Thompson**
*K-12 CS Academic Relations Manager, Microsoft*
Alfred was a CS teacher for eight years, has written several text books, and has been an AP CS reader.

**Angie Thorne**
*Hilliard Davidson HS, OH*
Angie teaches mathematics and CS, develops and facilitates online mathematics courses, and is a member of the CSTA Leadership Cohort.

**Anita Verno**
*Bergen Community College, NJ*
Anita is an Assistant Professor and Coordinator of IT. She has taught IT and CS within the corporate sector and in high school and college.

# csta Voice

## Competition Opportunities

*American Computer Science League*

**Carlen Blackstone**

The American Computer Science League (ACSL) presents an exciting opportunity for teachers and students in the wake of the terminated Advanced Placement Computer Science (AP CS) AB exam. The College Board's decision to eliminate the AB exam was initially very disappointing for me since I had prepared students for that exam for 25 years. However, I now see many new opportunities emerging. I believe the change has the potential for making CS more accessible to all students and will make it possible for us to enrich our programs with additional topics, including the ACSL.

The ACSL is an international CS competition that offers a variety of ways for schools to participate. Students in grades 6-9 can compete on five-member teams in the Junior Division. First-year programming students in grades 9-12 have the option of competing on either three-member or five-member teams in the Intermediate Division; more advanced students in grades 9-12 compete in the Senior Division.

Four locally-run competitions are held each year; each competition consists of two parts—a short-problem portion and a language-independent programming portion. The short problems challenge students in topics such as recursion, computer number systems, Boolean algebra, digital electronics, graph theory, data structures, and LISP. Non-programming mathematics and CS classes can also compete in the Classroom Division.

A final All-Star contest offers an opportunity for teams from the highest scoring schools to compete for valuable prizes. The 2009 All-Star contest was held near the U.S. Space and Rocket Center in Huntsville, Alabama. Previous contests have been held in locations including Anaheim, Chicago, Boston, and Washington, D. C. The All-Star contest provides a great incentive for students to work hard in preparation for the local contests.

The registration deadline is Dec. 1, 2009. New teams are encouraged to register as early as possible to access test preparation materials. Information, plus the results and photos of this year's event, are available at *www.acsl.org*.

## Out and About the Community

*Workshops Partners*

**Stephanie Hoeppner**

The computer science (CS) students of Clermont Northeastern Schools in Batavia, Ohio, were fortunate when Tata Consultancy Services (TCS) came knocking on our door last fall. Community service is a part of the TCS business model so a partnership with the school was a natural for the technology company. After a few conversations, plans were in place for a couple workshops involving our CS students.

About 50 students participated in two workshops and learned about computing careers. The first workshop centered around the theme, "What is IT?" while a second workshop involved 12 students on a Saturday morning to learn about dynamic Web development. TCS was so pleased with the participation and the willingness of the school to partner, that they also planned a two-day summer camp for our students at their corporate offices. The students participated in logic competitions and learned a script language to program small robots through a maze.

Plans for this year include more CS workshops that are not easily accomplished in a classroom and activities to complement course content.

TCS believes that if they invest in local students that some of them will pursue a CS career and perhaps return to work for TCS. This is the beginning of a wonderful partnership that will give our students more than I could have asked for.

## College Connection

*Indiana University*

**Esfandiar Haghverdi**

**Editor's note:** *This dialog with Esfandiar Haghverdi, Director of Undergraduate Studies at Indiana University's School of Informatics & Computing, is a continuation of our series of interviews with CSTA institutional members. Please share with your students these details about the computer science (CS) programs at Indiana University (www.informatics.indiana.edu).*

Indiana University has over 40,000 students enrolled on the Bloomington, Indiana, campus. Students can learn to build computing systems and tools by earning a Bachelor of Science in CS or learn to apply IT tools to a wide variety of application domains by earning a Bachelor of Science in Informatics. They can pursue additional goals by continuing on at the graduate level in the School of Informatics & Computing.

**CSTA: What draws students to your program and what keeps them there?**
**Haghverdi:** Students are drawn to our programs for many reasons, one of the most popular being that they can tailor their major to their own interests and follow their passion. Besides ample professional opportunities, our students see the opportunity to work with IT in innovative ways and enjoy the student-centered environment. Technology is everywhere in today's world, and our students leave with a strong, technology-centered education.
**CSTA: What skills can students acquire before college that will help them succeed in your program?**
**Haghverdi:** High school students should take any course that helps them expand their computing experience and continue with math and science courses throughout their high school years. They should practice both written and oral communication skills and be observant of the many ways information technology impacts life. Activities such as learning a programming language, navigating the Web, or creating a website would be good preparation.
**CSTA: What cool careers are your graduates prepared for?**
**Haghverdi:** Our graduates are starting their own businesses leading IT initiatives to solve world hunger; developing solutions for financial, technology, and consumer product companies; and changing the face of healthcare.
**CSTA: What topics will students study?**
**Haghverdi:** Informatics is a multi-faceted discipline with numerous fields of study and specialty areas that blends the study of information technology with solving real-world problems. An informatics major would likely take courses in social informatics, information infrastructure, human-computer interaction, information representation, multimedia arts and technology, and security.

CS students complete a curriculum focused on topics such as high performance computing, networks, databases, robotics, and programming languages. They would study software systems, data structures, artificial intelligence, computer

simulation, algorithm design and analysis, computing theory, programming, and computer structures.

**CSTA: Tell us a bit about the social environment of the CS program.**

**Haghverdi:** We play Wii. We play golf for charity. We bring informatics to the Boys and Girls Club. From academic programs to student leadership positions, students have unlimited opportunities at Indiana University and there's something for everyone in the School of Informatics & Computing. An academic advisor helps students plan a class schedule each semester so that they are confident in taking the right classes at the right time, and career advisors are with them at every step of the way. Students can join the Informatics Student Association and attend programs such as gaming hours, industry speakers, and networking events. It's easy to become part of the community at Indiana University.

## Curriculum in Action

*Robot Diaries*

**Leigh Ann Sudol**

Girls in Pittsburgh are using robots to convey moods and emotions with the help of the Robotics Institute at Carnegie Mellon University (CMU). In addition to creating large robots to do extraordinary things like winning the Darpa Urban Challenge, the CMU lab creates small robots to inspire the next generation of robot builders.

Emily Hamner and Tom Lauwers' Robot Diaries project engages girls to design and build robots that can communicate and express emotion from craft materials, programmable lights, and motors. Hamner and Lauwers initiated the project as a way to involve girls in science, technology, engineering, and mathematics (STEM) at the age when they typically wrestle with their self-concept. While they might be interested in technology, few have the opportunity to explore technology-related activities in depth.

The Carnegie Science Center in Philadelphia began its outreach effort by offering FIRST Lego League robotics activities for girls. Those efforts were not as successful as was hoped. The Robot Diaries project addresses some of the shortcomings by providing a non-competitive, artistic environment which has proven to be a better fit for many girls.

The robots are created in the development platform called Hummingbird. Participants connect motors for motion, LEDs for lights, and even vibration motors for sound effects. The robot bodies are typically built out of cardboard and paper allowing for creative animal and other creature shapes. Over the course of the workshops, the girls connect parts and add new functionality to the developing project. During a final session, the girls and their robots play charades by acting out and guessing emotions.

Hamner noted that, "The project gives the girls more confidence with their own abilities and with technology in general. They have the confidence to explore; they are more willing to try."

Hamner related a story about a particular young woman with limited technology skills who was easily frustrated with technology challenges. Over the course of the workshop, her skills and confidence grew to a level where she took immense pride in her talking robot and is now excited to use technology to enhance her creative writing.

Participants were recruited with the help of the local library and youth groups including the YWCA, a local home school group, and a CMU-sponsored group, CMITES. CMU is now working on ways to expand the program beyond the CMU lab and the Pittsburgh area, and plan to offer training workshops so that teachers can offer similar programs in their own areas.

The curriculum for various workshops is available online at *www.terk.ri.cmu.edu/curricula/robotDiaries-overview.php*.

## Classroom Tools

*Evolving Words*

One of the challenges we face as computing teachers is that we work, not just in a field of acronyms, but in a discipline where the definitions themselves seem to undergo subtle changes over time. As a result, we sometimes may be using the same words as someone else, but meaning something a bit different.

In the interest of clarity, it might be helpful to see how Wikipedia defines the core areas that often fall under computer science. Take a look at the definitions below and see how well they match your own definitions.

**Technology** in human society is a consequence of science and engineering. It is the man-made world of material objects of use to humanity, including systems, methods of organization, and techniques. People's use of technology began with the conversion of natural resources into simple tools.

**Information Technology (IT)** is a general term that describes any technology that helps to produce, manipulate, store, communicate, and/or disseminate information. IT is the study, design, development, implementation, support, or management of computer-based information systems.

**Computing** is the activity of developing and using computer technology, including computer hardware and software. It is the computer-specific part of information technology.

**Computer science** is the study of the theoretical foundations of computing and the application of the theories in computing. It is the study of the theoretical foundations of information and computation and their implementation and application in computer systems

**Computation** is a general term for any type of information processing that can be represented mathematically. This includes phenomena ranging from human thinking to calculations. Computation is a process following a well-defined model that is understood and can be expressed in an algorithm, protocol, network topology, etc.

### SHOW ME THE NUMBERS
Gender and Ethnicity of CS and CE Bachelor's Recipients 2007-2008

|  | % CS | % CE | % US Population |
|---|---|---|---|
| **Male** | 88.2 | 89.3 | 49 |
| **Female** | 11.8 | 10.7 | 51 |
| **Native Am.** | 0.8 | 0.4 | 1 |
| **Asian** | 14.7 | 19.8 | 4 |
| **Black** | 4.0 | 5.4 | 12 |
| **White** | 65.8 | 57.6 | 74 |
| **Hispanic** (of any race) | 6.1 | 8.1 | 13 |

**Sources:** Computing Research Association *www.cra.org*
U.S. Census Bureau *factfinder.census.gov*

# Voice

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**We're on the Web!** *csta.acm.org*

## MARK YOUR CALENDAR

**Grace Hopper Celebration of Women in Computing**
September 30–October 3, 2009 in Tucson, Arizona
*gracehopper.org/2009*

**Consortium for Computing Sciences in Colleges
(CCSC: Northwestern)**
October 9–10, 2009 in Parkland, Washington
*www.ccsc.org/northwest/2009*

**Consortium for Computing Sciences in Colleges
(CCSC: Midwestern)**
October 9–10, 2009 in Chicago, Illinois
*www.ccsc.org/midwest*

**Consortium for Computing Sciences in Colleges
(CCSC: Rocky Mountain)**
October 16–17, 2009 in Farmington, New Mexico
*www.ccsc.org/rockymt*

**Technology + Learning Conference**
October 28–30, 2009 in Denver, Colorado
*www.nsba.org/tl*

**Women of Color STEM Conference**
October 29–31, 2009 in Dallas, Texas
*www.womenofcolor.net*

**Consortium for Computing Sciences in Colleges
(CCSC: Eastern)**
October 30–31, 2009 in Villanova, Pennsylvania
*ccsce09.villanova.edu*

**ACSL 2009-2010**
December 1, 2009 Registration deadline
*www.acsl.org*

**Consortium for Computing Sciences in Colleges
(CCSC: Southeastern)**
November 13–14, 2009 in Salem, Virginia
*cs.furman.edu/ccscse*

**2010 NCWIT Award for Aspirations in Computing**
Applications accepted in the fall
*www.ncwit.org/award*

**African-American Women in Computer Science Scholarship**
December 1, 2009 Submission deadline
*www.cis.famu.edu/~aawcs/*

**FETC Florida Educational Computing Conference**
January 12–15, 2010 in Orlando, Florida
*www.fetc.org*

**TCEA (Texas Computer Education Association)**
February 8–12, 2010 in Austin, Texas
*www.tcea.org/convention/2010/Documents/index.html*

**SIGCSE**
March 10-13, 2010 in Milwaukee, Wisconsin
*www.sigcse.org/sigcse2010*

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## RESOURCES

Here's more information on topics covered in this issue of the *CSTA Voice*.

**Page 1:** CS & IT Symposium presentations  *www.csitsymposium.org*

**Page 2:** CSTA CS Snipits Podcasts  *csta.acm.org/Communications/sub/Podcasts.html*

**Page 2:** CSTA Source Web Repository  *csta.acm.org/WebRepository/WebRepository.html*

**Page 3:** Microsoft Developer Network – Academic Alliance  *msdnaa.net*

**Page 3:** Pre-Collegiate Faculty Connection  *www.microsoft.com/facultyconnection/precollegiate*

**Page 3:** DreamSpark  *dreamspark.com*

**Page 4:** CSTA Chapters  *csta.acm.org/About/sub/CSTAChapters.html*

**Page 5:** UW in High School  *www.cs.washington.edu/homes/reges/uwhs*

**Page 5:** Illinois Institute of Technology  *www.iit.edu/csl/cs/announcements/2010_exam_credit.shtml*

**Page 5:** International Baccalaureate  *www.ibo.org*

**Page 5:** Institute for Computing Education  *coweb.cc.gatech.edu/ice-gt*

**Page 6:** ACSL  *www.acsl.org*

**Page 6:** Indiana University School of Informatics and Computing  *www.informatics.indiana.edu*

**Page 7:** Robot Diaries - Carnegie Mellon University  *www.terk.ri.cmu.edu/curricula/robotDiaries-overview.php*