

VOICE

CSTEACHERS.ORG
COMPUTER SCIENCE TEACHERS ASSOCIATION

THE VOICE OF K-12 COMPUTER SCIENCE EDUCATION AND ITS EDUCATORS

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Your CSTA Community

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HELLO FROM OUR NEW EXECUTIVE DIRECTOR

Hello fellow CS teachers!

First and foremost, I want to say how excited I am to officially begin as the Executive Director of the CSTA! Over the past 5 years there's been a sea change in computer science (CS) education: policies at the state and local levels require schools to offer CS, students and parents demand access to CS courses, and tens of thousands of teachers began teaching CS. As an organization we must adjust to meet the changing needs of the growing movement of CS teachers.

The heart of our organization is our local chapters, and that's where I plan to invest our energy. As teachers, we all know that professional development is continuous, and CSTA chapters are here to support you after the many "first year" PD opportunities wrap up. We need to make sure that every chapter is learning from the success of our strongest, and every CSTA member has opportunities to refine their craft. This includes developing chapter leadership and creating new content to support engaging chapter meetings with meaningful professional development.

It's also time for the CSTA Annual Conference to grow and welcome all these new CS teachers. To start, I'm excited to see such an expanded K-8 lineup in this year's agenda. Looking towards 2019 and beyond we need to continue our growth to new locations with high profile keynote speakers. Our conference has doubled in size over the last four years and is poised for continued growth in the years to come.

Finally, in the wave of policy decisions being made around CS education, CSTA needs to make sure that teachers' voices are a part of the policy discussion. We need to promote the revised CSTA standards, which represent a community consensus for K-12 CS education, and build partnerships to ensure we are at the table for future policy decisions.

As I said, there's been a sea change in CS education, and that wouldn't be possible without the amazing work of the tens of thousands of CSTA members that bring CS to new students every day. Thank you for fighting to make sure that every student truly has access to high quality CS education.

Jake Baskin
CSTA Executive Director



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(csteachersorg)

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MEET ME IN OMAHA AT THE 2018 CSTA CONFERENCE

We invite you to connect with CSTA at the 2018 Annual Conference! Whether you're a new CS teacher connecting for the first time or a veteran member reconnecting with the CSTA family, all are welcome July 7–10 in Omaha, Nebraska.

We have planned three full days of the high-quality professional development you've come to expect from CSTA. Striving to connect with CS educators in every role and all grade bands and experience levels, we have half-day hands-on workshops, hour-long presentation sessions, birds-of-a-feather flocks, mini-sessions, and many opportunities to mingle with our supporters.

The planning committee examined over 200 submissions and reviewed feedback from last year's conference to create our best program yet. With more than 20 hands-on workshops and more than 40 sessions, we are confident there's something for everyone. Workshops are first-come, first-served and space is limited, so be sure to register early.

A new registration feature this year lets you indicate interest in presentation sessions. By taking a moment to provide us with this information, we will work to make sure everyone gets a seat to "standing room only" sessions.

Once again, the National Integrated Cyber Education Research Center (NICERC) will be joining us for the conference and offering their Education Discovery Forum immediately following the CSTA Conference, July 10–12.

You are sure to enjoy the fun events we've planned, too. Innovative, inspiring, and collegial features, keynote speakers, and lots of fun await you this summer in Omaha! Registration is open. Complete details, registration link, and housing information are available at the conference [site](#).

See you in Omaha!

Conference Chairs, Daniel Moix and Tammy Pirmann

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CSTA Voice is a publication of the Computer Science Teachers Association.

CSTA Voice is a quarterly publication for members of the Computer Science Teachers Association. It provides analysis and commentary on issues relating to K-12 computer science education, resources for educators, and information for members. The publication supports CSTA's mission to promote the teaching of computer science and other computing disciplines.

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MAKE YOUR VOICE HEARD: VOTE!

Dave Reed

For more than a decade, CSTA has been widely recognized as the voice for K–12 computer science (CS) teachers. CSTA works to connect teachers with quality professional development, build and support a community of practice, and advocate for K–12 CS education on behalf of its more than 26,000 members. The CSTA Board of Directors consists of 14 voting representatives, with 11 of those elected directly by the membership. In addition to working with the Executive Director in setting the organization’s direction, Board members lead in many of CSTA’s operational tasks through committees and task forces.

In this issue, we are pleased to announce the 9 candidates for the 5 open 2018–2020 Board positions. Their personal statements appear later in this issue.

K–8 Teacher Representative:

Lisa Bohaty and Kristeen Shabram

9–12 Teacher Representative:

Amy Fox and Chinma Uche

International Representative:

Miles Berry and Jason Zagami

At-Large Representative:

Michelle Lagos and Emmanuel Schanzer

State Department Representative:

Anthony Owen (unopposed)

As in past years, the election will take place online using the ElectionBuddy voting system. On February 22, all current CSTA members should receive an email from ElectionBuddy with a personalized link to the ballot. If you do not receive your email, first check your spam filter, then contact [CSTA Customer Service](#). Voting ends March 22, so be sure to make your voice is heard. VOTE!

ELECTIONS VOTE BY MARCH 22

K–8:

Lisa Bohaty

Kristeen Shabram

9–12:

Amy Fox

Chinma Uche

International:

Miles Berry

Jason Zagami

At-Large:

Michelle Lagos

Emmanuel Schanzer

State Department:

Anthony Owen

(unopposed)

SEE THEIR PERSONAL
STATEMENTS ON PAGE 15

CSTA Congratulates CSTA Members

Gail Chapman
*Exploring Computer
Science*

James H. Cross II
Auburn University

Renée A. McCauley
College of Charleston

for being
recognized by ACM
as

**2017
Distinguished
Members**

for their
outstanding
contributions
to the field of
computing.

Congratulations!

UPCOMING PD FROM NICERC

Chuck Gardner

Editor's note: NICERC will offer an "Education Discovery Forum" after the [2018 CSTA Annual Conference](#), July 10–12. NICERC is a sponsor and an exhibitor at the CSTA Conference in Omaha, Nebraska.

This summer, the National Integrated Cyber Education Research Center (NICERC) is proud to offer two national professional development conferences aimed at highlighting teaching content from NICERC's library. From June 4 to June 7, 2018, NICERC will host an Education Discovery Forum (EDF) in Augusta, GA.

From July 10 to July 12, 2018, NICERC will host an EDF in Omaha, NE, in conjunction with the 2018 CSTA Annual Conference. Both EDF sessions will provide teachers with a deep-dive into one content thread from the following:

- Cyber Literacy (9th grade)
- Cyber Literacy 2 (10th grade)
- Computer Science (12th grade)
- STEM: Explore, Discover, Apply (middle school)

Visit NICERC for more [information](#) on the content threads or the EDF, or send an [email](#) with the subject line: EDF 2018 – CSTA Voice.

Since 2012, NICERC's mission has been to impact the teacher's role in the classroom through three main avenues: rigorous and relevant classroom content, professional development to support the effective use of that content in the classroom, and supplementary and educational outreach content that can impact students outside of the classroom.

Teachers in the US and its territories are provided with free access to the content in partnership with funding from the Department of Homeland Security (DHS). Whether one teacher wants access to the content or a school district requests access for its entire team of science and math teachers, NICERC provides these services and resources at no cost. While the DHS grant does not provide for teacher substitutes or teacher food and lodging, certain accommodations can be made to help defray some of those costs in the form of educational scholarships. This combination of free content and supported professional development are typically welcomed opportunities for teachers and administrators alike.

Carver (2016) and Katehi, Pearson, and Feder (2009) both encourage the use of professional development to help teachers prepare new material for classroom use. In the case of Carver's research, she found that "professional development that focused on content-appropriate technology and skills, provided hands on opportunities, and addressed teachers' needs" was most beneficial for teachers learning new technology (2016).

In the case of the research summarized by Katheti et. al., we know that it takes more than just good curriculum to guarantee a successful science, technology, engineering, and mathematics (STEM) program. It takes teachers who "understand basic engineering concepts and are comfortable engaging in, and teaching, engineering design" (2009). In many cases these individuals are not available to teach in the classroom because they are professional engineers, successfully working in their field.

NICERC has found that with appropriate STEM professional development, many science and math teachers, and sometimes even humanities and social science teachers, are able to develop a high enough comfort level with the principles of engineering and technology to directly engage with students in the classroom. Over time, many of those same teachers will use the content to advance their own levels of comprehension in STEM fields.

Teachers can develop a quick comfort level with the content due to the immersive experience they receive at the professional development training. By having teachers attend workshops and play the role of the student, they can appreciate the material from a learner's perspective, one that allows them to explore, ask questions, and develop a complete view of implementation.

References

- Carver, L. B. (2016). Teacher Perception of Barriers and Benefits in K-12 Technology Usage. *The Turkish Online Journal of Educational Technology*, 15(1).
- Katehi, L., Pearson, G., & Feder, M. (Eds.). (2009). *Engineering in K-12 Education: Understanding the Status and Improving the Prospects*. Washington, D.C.: The National Academies Press.

SIGCSE & CSTA: PARTNERS IN EDUCATION

Briana B. Morrison

Editor's note: ACM is a sponsor of the 2018 CSTA Annual Conference. ACM and SIGCSE will be exhibitors at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska.

[SIGCSE](#) is the ACM Special Interest Group in Computer Science Education. It was founded in 1968 and is celebrating the 50th anniversary. SIGCSE has grown to over 2700 members in over 60 countries. In the original petition to establish the organization, the organizers included the goal of creating a forum to discuss common problems among educators attempting to develop and implement CS programs.

Many SIGCSE members are also very involved in CSTA at both the national and local levels. They see CSTA as a natural extension—growing from being concerned mainly with university level computing education to now including K–12 computing education. SIGCSE is very interested in expanding our partnership with CSTA, including being a sponsor of the CSTA Annual Conference.

Both organizations are interested in providing the most effective computing education possible to everyone. Both organizations see computing as necessary knowledge for an educated citizenry. As computing continues to grow in the K–12 arena, many of the traditional topics that SIGCSE members are interested in are migrating to K–12. Yet K–12 has its own set of concerns and issues, and some SIGCSE members will likely help research and develop tools and curricula for this space.

SIGCSE recognizes the similarities and differences between teaching computing in the K–12 space and at the university level. SIGCSE sees its role as a partner with CSTA—each with its own goals, but by cooperating and joining forces we can accomplish more

than either organization can individually. SIGCSE is a place where traditional CSTA members, those who teach K–12 computing, can also find helpful information. We sponsor three annual conferences: The Technical Symposium (often referred to as SIGCSE) is usually held in February or March in the US with approximately 1,300 attendees; The Conference on Innovation and Technology in CS Education (ITiCSE) is usually held in June and meets in Europe with approximately 200 attendees; and the International Computing Education Conference (ICER) is usually held in August at sites around the world with approximately 100 attendees. The organization sponsors two annual awards, Outstanding Contribution to CS Education and Lifetime Service to the CS Education Community.

In addition to sponsoring conferences and giving awards, SIGCSE sponsors the *ACM Inroads* magazine and publishes a newsletter. We have an active mailing list for discussion of topics of interest to SIGCSE members. We award a number of grants, called Special Projects, to help members investigate and introduce new ideas in the learning and teaching of computing. We also maintain resources for the education community.

One example of K–12 educators finding value in SIGCSE is the growth in attendance at our largest conference, the Technical Symposium. K–12 educators are offered a special registration fee and approximately 40 attend each year. The number of tracks in the conference with a K–12 emphasis has also grown. For the 2018 Technical Symposium there are 6 sessions specifically designed for K–12 educators! We would love for more CSTA members to attend SIGCSE events and we encourage SIGCSE members to attend CSTA events.

MEET THE AUTHORS

Adriane Bradberry

NCWIT

Adriane is the Communications Director, overseeing communications for creating awareness of the organization's mission, including public relations and social media.

Aparna Brown

BirdBrain Technologies

Aparna is the Manager of Strategic Initiatives and manages the company's philanthropic efforts, including a robot loan program.

Sandy Czajka

Riverside Brookfield High School

Sandy teaches APCS in Riverside, IL. She is the high school co-chair of the APCS-A Development Committee and a College Board Consultant for APCS Principles.

Michael DeGraff

UTeach

Michael taught high school for several years and was with UKanTeach before joining the UTeach Institute in 2011.

Michelle Friend

University of Nebraska

Michelle is an Asst. Professor of Discipline Based Education Research (DBER) in Teacher Education in Omaha where she teaches CS teaching methods.

Chuck Gardner

National Integrated Cyber

Education Research Center
Chuck is the Director of Curricula. He oversees the creation of content and workforce development initiatives for NICERC.

Irene Lee

MIT

Irene is a research scientist in the Scheller Teacher Education Program. She is the director of Project GUTS: Growing Up Thinking Scientifically and Teachers with GUTS.

Fred Martin

University of Massachusetts Lowell

Fred is associate dean for student success and professor of CS in the Kennedy College of Sciences at UML. He is serving a two-year term as Chair of the Board of Directors of CSTA.

Daniel Moix

2018 CSTA Conference Co-chair

Daniel teaches CS at the Arkansas School for Mathematics, Sciences & Arts, College of the Ouachitas, and Bryant High School. He is the CSTA Arkansas vice-president.

Continued on page 13

MILESTONES FOR HIGH SCHOOL AND COLLEGE WOMEN IN TECH

Adriane Bradberry

Editor's note: NCWIT will be an exhibitor at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska.

Nearly 400 US high school women in grades 9 through 12 have been selected to receive the 2018 NCWIT Award for Aspirations in Computing (AiC). Award for AiC recipients are chosen for their demonstrated interest and achievements in computing, proven leadership ability, academic performance, and plans for post-secondary education. The 2018 recipients were selected from more than 3,600 amazing, talented women from all 50 states, the District of Columbia, Puerto Rico, the US Virgin Islands, Guam, and all US overseas military bases. View a [complete list](#) of all 41 national winners and 350 honorable mentions.

Over the coming months, local and national awards celebrations will take place, honoring and encouraging these high school women who are active and interested in computing and technology. Follow NCWIT AiC on social media, using #NCWITAiC18, to learn more about the recipients' accomplishments and to catch celebration highlights.

The road for many Award for AiC recipients does not end at recognition: they strive to “give back” and engage with young girls to introduce or further interests in computing.

“Because of this award, I am more motivated to pursue a degree in CS and inspire other students to do the same.”

~ Award Recipient

NCWIT AspireIT provides an avenue for the women of the AiC Community to inspire the next generation of innovators. And, as an education professional, you are uniquely positioned to help support the AspireIT program. Learn more about AspireIT on page 7.

Ultimately, all AiC Community members “give back” by serving as real-life technical women who young girls can envision themselves becoming. Help your students see how their current interests and skills overlap with computing education and careers by sharing these remarkable stories with your students.

- What happens when AiC Community member and high school senior Rebecca Kahn interviews Apple CEO Tim Cook? Launched in January 2018, “[Innovator to Innovator](#)” presents a new series of personal essays and stories of innovation, as told by AiC Community members, by way of conversations with Apple executives. Participants talk about their personal philosophies, past experiences, and pivotal influencers—and discuss their shared mission to increase the meaningful participation of women in computing.
- NCWIT AiC social media features daily bio snippets, motivational quotes, and blogs on life-changing experiences.

With the NCWIT AiC Community now at 10,000 technical women and counting, they are contributing to a long-term impact on women's participation in computing.

LEARN MORE

[NCWIT AiC on Facebook](#)

[NCWIT AiC on Twitter](#)

[NCWIT AspireIT Program Information](#)

NCWIT ASPIREIT OFFERS FUNDING FOR LOCAL CS PROGRAMS

Kate L. Pickle

Editor's note: NCWIT will be an exhibitor at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska.

“I just want to say how grateful I am of the National Center for Women in Technology (NCWIT); I’m so glad to be part of this wonderful group of girls and women in technology! Truly, NCWIT provides so many excellent opportunities, resources, and support. As a part of this group for three years now, NCWIT has only encouraged me more into computer science. Also, extra thanks to #AspireIT to inspire girls into STEM! I just want to share pictures of this recent AspireIT program I’ve done (sic). The girls were super excited about programming Sphero Robots. Through AspireIT, my confidence in teaching, leadership, and public speaking has improved.” ~ Cindy S.

This quote was recently shared by an Aspirations in Computing Community members and AspireIT Leader and is just one of many testimonies to the impact and value of NCWIT’s programs. Our [AspireIT](#) initiative is the perfect opportunity to encourage more girls to pursue technology in your communities.

NCWIT AspireIT is a technology outreach program for K–12 girls. AspireIT provides an opportunity for young women to share their passion for computing with a younger generation of girls. By partnering with non-profit partner organizations (that could be you!), these high school and college community members create and lead tech-related programs for girls in their communities. The Partner Organization serves as a mentor and fiscal agent for the program—and NCWIT will provide up to \$3,000 in funding to help make it all happen! AspireIT Leaders engage so that they can:

- Give younger girls confidence in their own abilities.
- Inspire future innovators.
- Develop leadership skills that strengthen resumes.
- Increase confidence in their abilities.
- Socialize, network, and build a community of support for girls and women interested in technology.

[AspireIT funding](#) for programs occurring between June 15 and October 14, 2018, is now open. Applications are due March 11, 2018.

As an education professional, you are uniquely positioned to help support this program empowering leaders to grow their confidence and inspiring the next generation of innovators!

- Encourage a young woman from your AiC Community to be AspireIT Program Leaders. Don’t know if there are community members in your area? Reach out to us with your location and we can check!
- Sign up on our website as a potential [AspireIT Partner Organization](#).
- Share this opportunity with other schools and organizations in your network.

These programs don’t happen without the generous gift of your mentorship, so please sign up today!

Learn more about upcoming [AspireIT Programs](#).

Do you have questions or are you interested in helping to review applications in mid-March? [Email](#) the team.

BIRDBRAIN TECHNOLOGIES: ROBOTICS FOR ALL STUDENTS

Aparna Brown

Editor's note: BirdBrain Technologies is a sponsor of and exhibitor at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska.

BirdBrain Technologies is excited to be joining teachers at the 2018 CSTA Annual Conference this summer in Omaha! BirdBrain Technologies serves as a catalyst for transformative, maker-based learning experiences for all students. Founded at Carnegie Mellon University in 2010, BirdBrain was created to promote gender equality and diversity in engineering and robotics. Our extensive research yielded two products: the [Finch Robot](#) and the [Hummingbird Robotics Kit](#).

The Finch is a robot that inspires and delights students learning computer science (CS) by providing a tangible representation of their code. The Finch Robot works with popular and real-world programming languages such as Snap!, Scratch, Python, and Java.

The Finch responds to light, temperature, and obstacles, with coding options for students of all ages. The Hummingbird Robotics Kit is comprised of lights, sensors, and motors, allowing students to build robots out of any materials. The Hummingbird Robotics Kit enables open-ended and creative engineering and design projects that combine CS and making. Free, standards-aligned curriculum is available to help teachers achieve interdisciplinary learning by integrating robotics and CS into subjects from English to ecology, math to music, and beyond.

Both of BirdBrain's products empower students to build technical and creative skills by engaging in flexible problem-solving activities. Hundreds of thousands of students have been impacted by BirdBrain Technology products. A large part of our mission is to support educators interested in introducing or furthering CS, engineering, and making, in and out of the classroom. We work collaboratively to support teachers through curricular materials, tutorials, and professional development.

If you are interested in learning more about the Finch Robot before the CSTA Conference, check out our [Finch Robot Loan Program](#).

At BirdBrain Technologies we are firm believers that every student should have the chance to learn CS. Our Finch robot loan program is one way we diversify the reach of our robots, with the goal of catalyzing computational thinking experiences for students who might not ordinarily have the opportunity to program a robot during their regular school day.

During the 2018–2019 school year, we will be lending 1,200 Finch robots to districts, schools, and libraries.

[Applications](#) open on March 17, 2018.

Summer 2018 will be an exciting time for BirdBrain Technologies. Come see our new products at our exhibit booth during the CSTA Conference.

**CSTA is headed
to Omaha,
Nebraska**

**Join us for the
CSTA Annual
Conference**

July 7–10, 2018

IMPLEMENTING APCS PRINCIPLES? RECRUIT NOW!

Michael DeGraff

Editor's note: UTeach from the University of Texas will be an exhibitor at the [2018 CSTA Annual Conference](#), July 10-12, in Omaha, Nebraska.

UTeach Computer Science (CS) works with teachers across the nation to help implement Advanced Placement CS (APCS) Principles with training and support through our UTeach CS Principles curriculum. But with all that needs to be done to create a #CSforAll plan, it's sometimes easy to forget about the most important aspect of this work: the students. By the time we meet with teachers in the summer, it is too late to recruit students for the class because students have typically already chosen courses for the upcoming school year. If you are planning to offer APCS Principles next year, start recruiting as soon as you can. Don't wait until you choose the curriculum or find the training; do it now!

The explicit goal of APCS Principles is attracting and engaging those who are traditionally underrepresented with essential computing tools. We can't do that if students and parents don't know about the course. We also know that the ones who are most likely to seek out the course are the same students already likely to take CS coursework. In our trainings, we ask teachers to imagine a student in their school that they expect never to take a CS course. The student they should personally approach to let them know that CS Principles is for them.

In addition to speaking directly with students, here are a few other things you can do recruit students into CS:

- Recruit students with a friend or group of friends. It's a lot easier to enter a new context when you're not alone. Encourage students to sign up with friends.
- Talk to parents. Parents can be very influential in the course selection of their children. Be sure to find ways to tell parents about the benefits and opportunities associated with learning CS.



- Talk to counselors. APCS Principles was created to engage students in CS who may not have encountered it in the past.

There are a lot of preconceived notions about AP courses. Tell counselors that APCS Principles is different. The Principles assessment includes the development of two artifacts which account for 40% of the final score. One of the seven big ideas driving the course is creativity. Let counselors know every student is welcome in APCS Principles.

Check out our [UTeach CS Personalized Recruitment Plan](#) and [Personalized Recruitment Plan Worksheet](#).

LEARN MORE

UTeach [PD opportunities](#)

NCWIT [recruiting resources](#)

College Board [recruiting resources](#)

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- ThinkFun
- Union College/ACM-W
- UTeach Texas
- Zulama

** Participating as both Sponsor & Exhibitor*

INVESTIGATING FAIRNESS IN MACHINE LEARNING APPLICATIONS

Irene Lee and Fred Martin

Editor's note: Irene Lee and Fred Martin will deliver the workshop, "Investigating Fairness in Machine Learning Applications," at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska. Check the program for time and location.

The proliferation of artificial intelligence (AI) technologies is changing the way we live, learn, and work. Machine learning, and the perils of biased prediction systems, have been all over the news lately. With so many aspects of our lives being influenced by AI, it is critical that students learn to interact with AI technologies, use them effectively, and evaluate the opportunities and potential problems presented by AI.

In the upcoming CSTA Conference workshop titled "Investigating Fairness in Machine Learning Applications," we will introduce concepts fundamental to machine learning and demonstrate how a "fairness" framework can be used to engage students in examining and refining machine learning applications.

We will prepare middle school teachers to introduce machine learning to their students in a friendly, easily-grasped way. First, we'll play a tabletop activity that introduces classification trees and make links to machine learning algorithms. Then we'll run experiments with Google's Teachable machine to make connections between machine learning algorithms, data sets, and biases that can be introduced into machine learning systems. Next, we'll introduce a machine learning process diagram and "fairness" rubric used to investigate bias in machine learning systems. With these scaffolds, we will lead participants through a simplified version of the machine learning process.

We will play the Pop Culture game (an App Inventor app) to crowdsource data and then use iSENSE to analyze the contributed anonymous opinion data on various student-relevant trends. We will filter and visualize data along different parameters or facets (such as location and age) using the iSENSE Facets Dive tool. Then we will create a training data set and a validation set and use the fairness rubric to evaluate if underlying biases exist in the data sets. Finally, time allowing, we will demonstrate the use of a new tool to train the model and make predictions based on the training set.

The implications of the proliferation of machine learning systems for the development of the future workforce are clear—students, teachers, and the public need to understand how biases can be introduced and reinforced in machine learning systems and how bias can be mitigated.

Middle school teachers will come away with an understanding of the machine learning process and how biases can be introduced and reinforced in these systems, either intentionally or unintentionally, and how bias can be mitigated. Additionally, the presenters will lead discussions on investigating fairness of machine learning systems as a mechanism to engage students in CS and its implications on computational thinking.

Come join us for this exciting workshop—attendees will come away with a set of activities and tools that are classroom ready!

PHYSICAL COMPUTING ENHANCES CS EDUCATION

Neil Rickus

Editor's note: Neil Rickus will deliver the workshop, "An Introduction to the micro:bit Through Storytelling and Curriculum Links," at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska. Check the program for time and location.

The BBC micro:bit (a pocket-sized programmable computer) was introduced into UK schools in 2016 and was given to every pupil in year 7 (ages 11–12) during the summer term. Since the device's introduction, it has been used in many schools and increasingly is being used by younger children to enhance their understanding of computer science (CS) concepts. Through the micro:bit Foundation, the device is now available in countries throughout the world, including the US, Canada, Hong Kong, Singapore, and most of Europe.

The micro:bit contains a lot of technology for \$15, including LEDs, buttons, an accelerometer, a gyroscope, and Bluetooth. Initial research within the UK has shown that using the micro:bit improves both pupils' and teachers' attitudes about learning and teaching of CS.

Many teaching resources are now available. For elementary pupils, extensive lesson plans are available for non-specialist teachers, which enable children to make a range of projects, such as a step counter or data logger. For older children, the device provides an excellent introduction to text-based programming and can even be linked to Minecraft.

During the CSTA Conference workshop, attendees will create several programs for the micro:bit and utilize all the device's hardware. We will start by examining the device's block-based programming environment (which is like Scratch) to display text and images and create basic animations.

Attendees will use the micro:bit inputs to cause the device to respond to events. We will also undertake an extended project linked to elementary school curriculum topics, including English, science, art & design technology, and computing. Finally, we will look at how the micro:bit can be used to introduce text-based programming languages, along with some of the barriers and challenges of using physical computing devices in the classroom.

Workshop attendees will gain an appreciation of physical computing, including how it can increase student engagement and provide opportunities for students to gain a greater understanding of CS concepts. Using open-ended projects to solve real-world problems, we'll discuss how girls are more likely to continue studying CS if they use such projects in their CS courses. Attendees will also explore various pedagogical approaches, including tinkering, guided exploration, and project-based learning.

LEARN MORE

[micro:bit Project Community](#)

[micro:bit for Elementary Schools](#)

MEET THE AUTHORS

Continued from page 5

Briana B. Morrison

University of Nebraska Omaha
Briana is an assistant professor of CS. Her research explores cognitive load theory within learning programming and expanding and preparing CS teachers.

Kate L. Pickle

NCWIT AspireIT
Kate is the Program Manager for the AspireIT Program. Her career has focused on engaging girls in the exploration of STEM through informal education venues.

Tammy Pirmann

2018 CSTA Conference Co-chair
Tammy is the K-12 Coordinator for CS as well as a high school CS teacher at the School District of Springfield Township, Montgomery County, PA.

Neil Rickus

University of Hertfordshire, UK
Neil is a Senior Lecturer in Computing Education and the project lead for the Computing at School (CAS) East of England Regional Centre.

Henry Vo

Richardson High School
Henry is a CS teacher and the director of the CS magnet program in Richardson, TX. He has taught for over 12 years, teaching APCS and game programming and design.

CLASSES AND OBJECTS AND LEGOS

Sandy Czajka

Editor's note: Sandy Czajka will deliver the workshop, "Classes and Objects and LEGOs...Oh My!" at the [2018 CSTA Annual Conference](#), July 10-12, in Omaha, Nebraska. Check the program for time and location.

Do you wish you could use crayons, LEGO toys, and other playthings in your computer science (CS) classes? Are you looking for ways to do more unplugged activities to engage your students? How would you like to make learning about classes and objects more hands-on, exciting, and understandable for your high school students? If you answered "Yes" to any of these questions, then the "Classes and Objects and LEGOs...Oh My!" workshop is the place for you!

This session will provide participants with hands-on strategies, including unplugged activities and manipulatives, to teach classes, objects, and design in an APCS A context. Secondary teachers will explore strategies for how to introduce classes and objects, how to teach students to make instances of objects, and how to design a program with the necessary attributes and behaviors in a class. All of this will be done with hands-on, unplugged techniques, including manipulatives such as paper, crayons, and LEGO toys.

Attendees will examine example free-response questions from the APCS A assessment to identify how knowledge of classes and program design are necessary for student success. Some sample lessons, for designing and implementing a class for emojis, determining the attributes and behaviors of a LEGO, designing a LEGO class, and then using that class to create a LEGO structure, will be shared in the workshop.

Attendees will have time to share their own ideas, ask questions, and network. Participants can expect to receive links to digital lesson plans for teaching classes and objects, sample free-response questions, and a list of past free-response questions from the AP exam. Through group discussions, participants will share ideas and suggestions for modifications to these materials to help scaffold the learning and present the ideas.

The goals for this workshop are to provide lesson plans that can be immediately implemented in a high school CS class, to help participants see how toys and unplugged activities can help students better understand abstract concepts, and to have fun! This workshop will be of interest to high school CS teachers who are currently teaching APCS A or a similar course that requires students to learn and work with objects.

Let us know if your contact information changes.
customerservice@csteachers.org

THE CSTA VOICE WELCOMES YOUR COMMENTS

publications@csteachers.org 1-608-436-3050
Letters to the Editor are limited to 200 words and may be edited for clarification.



ACM founded CSTA as part of its commitment to K-12 computer science education.

MAKING VR A REALITY FOR STUDENTS

Henry Vo

Editor’s note: Henry Vo will deliver the presentation, “Getting You and Your Students Developing with Virtual Reality,” at the [2018 CSTA Annual Conference](#), July 10–12, in Omaha, Nebraska. Check the program for time and location.

Have you seen the movie *The Lawnmower Man*? Remember the Holodeck on *Star Trek*?

Virtual reality (VR) used to be science fiction. It’s now a reality (no pun intended)! VR may seem like a gimmick to show how far technology has advanced, but the truth is, VR has real potential. Admittedly, we still have a long way to go in development and application. For example, think about the first mobile phones. They were too big and bulky to carry around and had a short battery life. Now, phones fit in our pockets and do much more than enable phone calls. VR could take off in the same way.

VR is making its way into classrooms. Students are participating as the end-user of VR with a cardboard headset to view or interact with the virtual world. This is an inexpensive way to experience VR. There are other fully immersive VR systems on the market, such as the HTC Vive, Oculus Rift, and Microsoft Windows Mixed Reality. The VR system we will demonstrate at the CSTA Conference is an immersive experience. Participants will sense depth, and real-world movement will translate to movement in VR. Users will be able to interact with objects in the VR environment.

Questions about where to start, what materials are needed, the cost, and the ability of students to grasp the concepts are all concerns teachers have about VR development. While cost may be an issue, due to the novelty of VR, there are free resources and software for all developer levels. VR systems and accessories are readily available, with more being developed all the time. Students who are determined to learn and willing to work hard will be able to develop a VR demonstration.

The session “Getting You and Your Students Developing with Virtual Reality” will help teachers get started. Attendees will learn about VR hardware, software, and steps for integrating VR development into their classrooms. We’ll investigate the history of VR, what hardware is best for certain applications, and program simple tasks. Attendees will leave the session with knowledge and confidence that VR development is possible for their students.

LEARN MORE

Unity unity3d.com

VRTK vrtoolkit.readme.io

READING TO LEARN IN CS

Michelle Friend

Editor’s note: Michelle Friend will present the session, “Reading to Learn in Computer Science,” at the [2018 CSTA Annual Conference](#). Check the program for time and location.

Who among us hasn’t been frustrated with a student who didn’t read the instructions for an assignment? The students’ lack of understanding is often more than simple inattention. It can often be traced to unique complexities of scientific and technical text—exactly the kind of writing found in computer science (CS) textbooks, Stack Overflow, and even our assignment documents.

Helping students read for understanding goes beyond just introducing vocabulary. There are other reading challenges for students to overcome. For example, did you know that the hardest words for students to understand are not the “level three” technical words unique to CS, but in fact “level two” academic words that we are less likely to define for our students? And these are particularly difficult for students who might not hear them at home from their families, creating an additional barrier to participation in your class.

The “vaccination model,” in which CS teachers assume students will learn to decode computing texts from their language arts teachers, doesn’t work. CS teachers must be prepared to help students read about computing. While this is particularly important for English-language learners and other weak readers, the strategies covered in this session are helpful supports and pedagogical tools for even our strongest students and work in any discipline.

This session is particularly timely, due to the requirements of Common Core, which calls for all subjects to incorporate literacy practices. Even for states and subjects not directly affected by the Common Core, supporting students in their efforts to read academic text helps them to engage with material independently, within and beyond the classroom.

This session will describe and give examples of many of the challenges associated with reading scientific and technical texts (such as polysemy and nominalization—big words for ways we make our writing harder to read!). It will then introduce interactive, evidence-based strategies to support students in understanding empirical texts.

Rather than taking valuable time away from your classes, these activities will prompt student participation and engagement, and help them to independently use textbooks and other text sources, such as manuals and online help, to find the answers they need. The strategies will make CS more accessible to your students, and help you be a better CS teacher and meet the Common Core standards for literacy.

PERSONAL STATEMENTS

Editor's note: We are pleased to announce the nine candidates for the five open 2018–2020 Board positions. Below you will find their personal statements. Vote by March 22.

K-8 TEACHER REPRESENTATIVE

Lisa Bohaty

K-5 CS Teacher

Lincoln Public Schools

Lincoln, Nebraska, USA

Personal Statement: I believe that all students can and should be given a chance to learn computer science (CS). CS teaches students problem solving and critical thinking skills. These are some of the top job skills that students will need for their future. I believe that students learn best through passion, projects, peers, and play. When students can explore their passion into their projects they control their learning. I incorporate play into my classroom with robots and physical computing.

What experiences and/or interests in K-12 CS/IT education qualify you to serve as a leader of CSTA? I teach CS to students in grades kindergarten through fifth grade. I teach computational thinking, problem solving and creativity skills. I am a classroom teacher who became a CS teacher, so I have firsthand experiences to help other teachers learn CS. I have a strong passion for CS!

What previous experience do you have with CSTA? I am a member of CSTA and active in my local chapter. I have been a member of CSTA for two years. Last summer I won a Rolls Royce Scholarship to attend CSTA in Baltimore. I learned so much from other fellow CS teachers. I often participate in weekly twitter chats and love to sharing and learn from other educators around the world.

What leadership skills do you have that would enrich the Board and the organization? I am a strong teacher who loves to lead others. I enjoy sharing my skills and helping others learn new skills. I am a Google Certified Trainer and often present at conferences and trainings. This summer I am leading Code Camps for teachers to expand their understanding of CS and some of the curriculum available for K-12 students.

What do you think are the most important issues for K-12 CS education? CS is one of the fastest growing fields and yet there are many jobs that go unfilled because students do not have these skills. I think the most important issue right now is that CS is not a universally accepted curriculum and many schools do not offer courses. I want to help change this where all students can learn CS.

K-8 TEACHER REPRESENTATIVE

Kristeen Shabram

Business and Technology Teacher

Westside Middle School – Westside Community Schools

Omaha, Nebraska, USA

Personal Statement: I am passionate about helping students develop a solid foundation of CS knowledge. To achieve this, teachers need access to the latest research, tools, and curriculum in CS education, as well as professional development opportunities to learn best practices when teaching CS. I look forward to sharing my passion for CS education, helping teachers develop innovative curriculum, and bringing enthusiasm and creativity to our organization.

What experiences and/or interests in K-12 CS/IT education qualify you to serve as a leader of CSTA? I have taught CS at the middle level for the past four years, as well as collaborated with teachers in other disciplines on integrating CS concepts into their curriculum. I also serve as a member of my school district's Information Technology/CS Committee, a group who develops a K-12 framework for students.

What previous experience do you have with CSTA? I have been an active member of the Metro Omaha CSTA Chapter for five years. I have served as Vice President, and I am currently in my second year as Chapter President. At the 2017 CSTA Conference in Baltimore, I participated in the Chapter Leadership Summit. Currently, I am serving as a member of the 2018 CSTA Conference Planning Committee.

What leadership skills do you have that would enrich the Board and the organization? Achiever is one of my strengths from the Gallup StrengthsFinder. I take pride in goal setting and organizing steps to achieve these goals. As a team member, I am motivated to work hard to complete any task that moves the team closer to achieving success. My drive and determination are my inspiration to push forward when encountering challenges.

What do you think are the most important issues for K-12 CS education? The first issue is the need for diversity in CS, specifically the recruitment of girls. We need to develop innovative strategies that motivate girls to explore CS. The second issue is developing computational thinking skills among students. These skills help students develop a foundation of CS knowledge.

PERSONAL STATEMENTS

9–12 TEACHER REPRESENTATIVE

Amy Fox

CS Teacher

Valhalla UFSD – Valhalla High School

White Plains, New York, USA

Personal Statement: Since 1993 I have been a CS teacher in a few very different types of school districts: rural, urban, and suburban, each with its own set of issues. Yet all had the same basic challenges. Each faced low enrollment, especially with girls and minorities. A consistent goal for me has been to turn all of that around. With hard work & dedication I have developed a robust set of HS courses as well as a K–12 curriculum. We now have 15+% of our population enrolled, 25% girls, 15% minorities.

What experiences and/or interests in K–12 CS/IT education qualify you to serve as a leader of CSTA? I've been a CS teacher for 25 years - everything from elementary school after school club to HS introductory courses to AP CS A and at the college level. I've built up our HS CS offerings over the last 9 years and in the last 3 led an excellent team of technology teachers to write a K–12 district CS strand aligned to CS K–12 Framework and CSTA Standards.

What previous experience do you have with CSTA? I've been a member of the CSTA for many years and in 2015 founded the Lower Hudson Valley Chapter in NY. As chapter President, I hold monthly meetings, co-organize an annual CSTA Student Tech Expo/Contest, and worked with BOCES to facilitate CS PD to all K–12 teachers in the region. Through CSTA many otherwise isolated teachers can now collaborate.

What leadership skills do you have that would enrich the Board and the organization? Probably my best leadership skills are organization, an ability to see the big picture as well as be detail oriented, time management, knowing when and how to delegate, and the ability to make a difficult decision. I use these skills in the various positions I have both in school as well as with the CSTA Chapter.

What do you think are the most important issues for K–12 CS education? Some of the most important issues facing CS education are interest, equity, and availability. From my experience, all of these can be addressed with a simple, yet challenging to implement, solution. ALL students need to be exposed to CS concepts and taught computational thinking skills early on. Our K–12 strand is successfully addressing each issue.

9–12 TEACHER REPRESENTATIVE

Chinma Uche

Math and CS Teacher

Academy of Aerospace and Engineering

West Hartford, Connecticut, USA

Personal Statement: I have been privileged to serve in the CSTA Board as the 9–12 rep and I ask for your support to continue to serve. While in the Board, I served in the PD and Chapters Committees. As a fellow classroom teacher, I understand the need to excite students with CS and the important work teachers do to that effect. The changing CS landscape requires access to quality PD opportunities to enable teachers to continue to grow and to meet the needs of their students. I will serve to the best of my ability.

What experiences and/or interests in K–12 CS/IT education qualify you to serve as a leader of CSTA? As a CS teacher since 2002 (with hands-on experience of Scratch, Snap, App Inventor, Alice, Pencil Code and App Lab), a Code.org Fundamentals Facilitator, co-PI of the Mobile CSP project, AP CSP Consultant, and a CSTA chapter president, I work with and advocate for teachers. I have also led teacher workshops and made presentations at conferences.

What previous experience do you have with CSTA? I have served CSTA as a member of the 2008 cohort of CS Advocacy Leadership Team (CSALT) representing Connecticut, a chapter president since 2009 (CTCSTA) and a member of the CSTA 2015–2016 Standards Revision Task Force. I currently serve as the 9–12 rep on the CSTA Board. In these, I always promoted the vision of CSTA and advocated for teachers.

What leadership skills do you have that would enrich the Board and the organization? As CTCSTA president, I have worked with many stakeholders in promoting respect for teachers and valuing teachers' time. I will bring to the Board a diverse perspective as a high school classroom teacher, and a PD facilitator for K–12 teachers, and as a chapter president. I have a good relationship with our HE colleagues and K–12 curriculum providers.

What do you think are the most important issues for K–12 CS education? The CS community has, through its advocacy efforts, brought into the CS classroom students with varying levels of need/experience. Teachers need preparation to meet students' need while maintaining engagement. The community needs to continue to cherish the values of Inclusion, Diversity, Equity and Access while continuing to care for its members.

PERSONAL STATEMENTS

INTERNATIONAL REPRESENTATIVE

Miles Berry

Principal Lecturer in Computing Education

University of Roehampton

Roehampton, London, UK

Personal Statement: I would consider it an honor to serve CSTA as part of its board for a further two-year term, ensuring a clear and effective voice for teachers in promoting CS education.

- Member of Computing At School board
- Member of BCS Academy of Computing board
- Member of Raspberry Pi Foundation
- 18 years' teaching experience, including three as a head teacher
- 8+ years' experience in initial teacher training
- International curriculum dev., PD and consultancy work

What experiences and/or interests in K–12 CS/IT education qualify you to serve as a leader of CSTA?

- Long experience as an IT and computing teacher
- An international reputation in training new and established teachers to teach computing
- Commitment to an inclusive approach to computing education
- Curriculum design and resource development experience (national curriculum, Barefoot, Switched On Computing, Quickstart Computing)

What previous experience do you have with CSTA?

- Serving on board as International Representative
- Serving on executive committee, professional development committee and international sub-committee
- Articles for The Voice and Advocate blog.
- Attended 2016 conference and spoke at 2017 conference
- International reviewer for CS K–12 framework
- Promotion of CSTA initiatives internationally

What leadership skills do you have that would enrich the Board and the organization?

- MBA in education management
- Experience as a school leader, community manager, and manager in a university
- Experience in not-for-profit sector governance
- Project management (CAS TV, Project Quantum, Hello World)
- Work with policymakers and senior officials in UK and abroad
- Active in social media: @mberry and milesberry.net

What do you think are the most important issues for K–12 CS education?

- Professional development—quality, value, and coherence
- Resource development, particularly for novice teachers of CS
- Formative assessment, drawing on both projects and questions
- Inclusion and diversity: gender, socio-economic disadvantage, ethnicity, special educational needs
- Promoting CS education at local and school level

INTERNATIONAL REPRESENTATIVE

Jason Zagami

Lecturer

Griffith University

Southport, Queensland, Australia

Personal Statement: Elect an Australian CS/IT educator with a passion for maturing CS/IT education to the equivalent of science education in K–12 schools globally, and willing to contribute and support an international perspective to CSTA to help make this happen. An Australian contribution, emphasizing simplicity, fairness, and fun, coupled with many years' experience in bettering CS/IT education can help provide the diversity needed for creative solutions to the many challenges and opportunities in CS/IT education.

What experiences and/or interests in K–12 CS/IT education qualify you to serve as a leader of CSTA? K–12 Teacher of CS/IT for 15 years then Researcher/Teacher Educator of CS/IT for last 12 years. Written two different state CS curricula and been involved in developing an Australian compulsory K–10 CS curriculum. President for state (QSITE) and national (ACCE) CS/IT teacher associations and edit the Australian Educational Computing journal.

What previous experience do you have with CSTA? I have been a member of CSTA since international membership became available (2005?) and have made various contributions to CSTA Curriculum development and policy formation. Hosted CSTA executives on study tours to Australia and led CS/IT study tours for Australian CS/IT educators to the US and Canada to share and learn from each other.

What leadership skills do you have that would enrich the Board and the organization? 20+ years on state, national and international CS/IT boards, curriculum development, and CS/IT education research, brings a rich international perspective on CS/IT education, with experience in bringing together states to form a national approach that can be applied towards supporting the development of an international approach to CS/IT education.

What do you think are the most important issues for K–12 CS education? Moving beyond introductory activities in CS/IT education, the lack of information focused learning activities, re-engaging with a deeper conceptualization of computational thinking beyond the problem-solving process to building relationships between students and digital machines and addressing the gender impact of abstraction over relationships.

PERSONAL STATEMENTS

AT-LARGE REPRESENTATIVE

Michelle Lagos

CS Department Head / High School CS Teacher

American School of Tegucigalpa

Tegucigalpa, Francisco Morazan, Honduras

Personal Statement: 18 years as a CS Teacher have taught me that the CS ED community worldwide shares many things. While on the CSTA's Board of Directors I've been able to encourage girls to get involved in CS, gotten quality professional development, and collaborated with teachers globally. CSTA provides resources, collaboration, sharing experiences and understanding how improving CS education worldwide is empowering and life changing. I'd feel honored to be able to keep on working on supporting CS teachers worldwide.

What experiences and/or interests in K-12 CS/IT education qualify you to serve as a leader of CSTA? Over 18 years I've taught CS to all K-12 divisions, currently 9-12, CS Dept. Head, Core Leadership team analyzing the current curriculum, making improvement proposals. Member of STEM committee creating a school wide STEM program, Robotics club Coordinator, oversee the Academic tech. budget, and work with staff integrating technology in the classroom.

What previous experience do you have with CSTA?

International Rep. (2012-2014) worked with:

- Curriculum committee
- K-8 committee
- Chaired the International committee
- Computational thinking task force
- Writer on the CSTA advocacy blog
- Was a presenter at the conference

Rep. at Large (2016-2018) working with:

- IDEA committee
- Member engagement committee
- The board's executive committee

What leadership skills do you have that would enrich the Board and the organization? Leadership positions at my school and with the CSTA board have helped in understanding the commitment it implies, often achieving our goals. Taking responsibility as well as delegating some tasks when recognizing what the individuals bring to the table. Sometimes asking the hard questions for the benefit of the team.

What do you think are the most important issues for K-12 CS education? Helping administrators, educators, parents, and students understand what CS implies. It is a common belief that K-12 CS is learning application computing. By defining CS's scope clearly and shedding light on its integration with other courses, we can achieve a better level of understanding leading to more inclusion, diversity, equality, and support.

AT-LARGE REPRESENTATIVE

Emmanuel Schanzer

Co-Director, Bootstrap

Brown University

Alexandria, Virginia, USA

Personal Statement: I believe that the success of CS Education will be measured on three axes: Equity, Scale and Rigor. Getting every kid "coding" is useless if they don't *learn* anything. Rigorous CS classes in every school is great, but not if the only kids who sign up are rich white boys. A brilliant teacher who gets a diverse class to pass the AP is wonderful but can't be scaled. Getting one of these is easy. Two of these is hard. My mission is to work for all three.

What experiences and/or interests in K-12 CS/IT education qualify you to serve as a leader of CSTA? I've been a public high school teacher and middle school academic coach. I've run a national afterschool program and founded Bootstrap. I hold degrees and have professional experience in both CS and educational research. I am the director of CSPdWeek, and work across the CS-Ed community.

What previous experience do you have with CSTA? I've attended every CSTA conference since 2009 and have presented at most of them. I co-chair the PD Steering Committee and was instrumental in providing strategic feedback about the PD Pipeline.

What leadership skills do you have that would enrich the Board and the organization? I've demonstrated the ability to build consensus across the CS Ed community about a diverse range of topics. Between my duties as co-chair of the PD Steering Committee, director of CSPdWeek, and moderator of the CS Education Discussion forum, I've consistently been able to bring groups together and find common ground.

What do you think are the most important issues for K-12 CS education? CS Education has a credibility problem right now. For too long, our community has pushed CS for CS's sake, expecting people to jump on without real evidence of rigor or transfer. At the same time, there is a perception that CS-Ed is a trojan horse for Silicon Valley. Justified or not, CSTA must work to address these perceptions.

PERSONAL STATEMENTS

STATE DEPARTMENT REPRESENTATIVE

Anthony Owen (Unopposed)

State Director of CS

Arkansas Department of Education

Bryant, Arkansas, USA

Personal Statement: Because of Governor Hutchinson’s vision for CS, I, with the support of many local and national partners, have been able to lead Arkansas’s initiative to the forefront of computer science (CS) education. It is with great enthusiasm that I submit my application to continue serving the national CS teacher community as the State Department Representative to the CSTA Board of Directors for the next term. I look forward to continuing this opportunity to further CS education for all!

What experiences and/or interests in K–12 CS/IT education qualify you to serve as a leader of CSTA? Since 2015, I have been blessed as the Arkansas Director of CS to serve in a manner that ours has become nationally recognized as a leading state in CS education. I have assisted numerous entities in developing standards, writing for the K–12 Community Framework, and by providing state strategic planning and implementation guidance.

What previous experience do you have with CSTA? Serving on the board has allowed me to help enact policies and actions that directly benefit the membership and assist in the creating greater financial stability for CSTA. I also work closely with the CSTA–AR

chapter to promote and organize state events. I also serve on the Executive Committee and as an Advocacy Committee Board Liaison.

What leadership skills do you have that would enrich the Board and the organization? I have developed the ability to work effectively with a team; a strong work ethic; an ability to resourcefully brave tasks outside my normal job; an ability to absorb, disaggregate, and make timely yet informed decisions based on data; an exceptional technological prowess; and a passion to champion laudable organizational missions and values.

What do you think are the most important issues for K–12 CS education? Now that efforts are becoming more unified among the leaders in CS education, CSTA has an opportunity, through our great network of chapters and teachers, to assist bringing lagging areas along for the good of our students and world. This can be done through grassroots efforts of passionate educators that make up the CSTA membership!

WHAT’S IN OMAHA?

When you want a break from the non-stop action of the CSTA Conference, you’ll find lots of activities and attractions in Omaha. Here are a few to get you started.

Old Market

This is the heart of Omaha. Brick-paved streets feature horse-drawn carriages that trot in front of popular tourist sites. Plenty to see and do.

Henry Doorly Zoo and Aquarium

You’ll see piccaries in the Desert Dome, Rockhopper penguins, and sharks in the 70-foot shark tunnel. Don’t miss the world’s largest IMAX Theater, ideal for the whole family. And my favorite – ride the sky tram just over the top of animal enclosures.

Joslyn Art Museum

The Joslyn Art Museum features 19th and 20th-century

European and American artists, including Winslow Homer, Claude Monet, and Edgar Degas.

The Durham Museum

Affiliated with the Smithsonian Institution, the Durham chronicles Omaha’s history. There’s even a working soda bar, where you can enjoy a milkshake after touring the museum.

Lauritzen Gardens

This Botanical Center blooms with a variety of roses, herbs, peonies, and more. There are three miles of trails for an enjoyable walk through the sweet-smelling gardens.

Omaha’s Children’s Museum

Located in the Old Market area, this outstanding museum contains a Creative Arts Center, an Imagination Playground with a farm, a firehouse, and a market, plus several other interactive exhibits.

MARK YOUR CALENDAR

Computing at School (CAS)

Checkout the upcoming events in the UK

SIGCSE 2018

February 21–24, 2018, Baltimore, MD

Grok Learning Web.Comp 2018

February 26–April 1, 2018

ACSL Contest #3

March 9, 2018, in your classroom

Applications for AspireIT funding

March 11, 2018, applications due

CS4CT Summit 2018

March 16, 2018, Cromwell, CT

Finch Robot Loan Program

March 17, 2018, applications open

CCSC (Southwestern)

March 23–24, 2018, Claremont, CA

CCSC (South Central)

April 6, 2018, Fort Worth, TX

CCSC (Mid-South)

April 6–7, 2018, Memphis, TN

CCSC (Central Plains)

April 6–7, 2018, Maryville, MO

ACSL Contest #4

April 12, 2018, in your classroom

CCSC (Northeastern)

April 20–21, 2018, Manchester, NH

ACSL All-Star Contest

May 26, 2018, Barrington, RI

NICERC Education Discovery Forum

June 4–7, 2018, Augusta, GA

ITiCSE

July 2–4, 2018, Larnaca, Cyprus

2018 CSTA Annual Conference

July 7–10, 2018, Omaha, NE

NICERC Education Discovery Forum

July 10–12, 2018, Omaha, NE

Pathfinder Summer Institute

July 15–20, 2018, Bloomington, IN

Grok Learning Challenge 2018

Begins July 30, 2018

ICER 2018

August 12–16, 2018, Helsinki, Finland

Find more upcoming CS events on the CSTA website

[Contact us](#) to list your CSTA event.



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