STATEWIDE VERTICAL ALLIANCE TO BROADEN PARTICIPATION THROUGH INNOVATIVE, INVITING, AND RELEVANT COMPUTING EDUCATION

PROJECT “GEORGIA COMPUTES!”

An NSF Broadening Participation in Computing Alliance of
Georgia Institute of Technology, CEISMC (Center for Education Integrating Science, Mathematics, and Computing), Georgia Department of Education,
Girl Scout Council of Northwest Georgia, YWCA of Georgia, and the University System of Georgia.

http://www.georgiacomputes.org

The problem of broadening participation in computing runs from middle school where students lose interest in SMET, to graduate schools that are predominantly male and white. The research literature shows that women and other members of under-represented groups avoid computing because of their perceptions of it: unwelcoming, “defensive,” and irrelevant. Georgia Tech is a national leader in defining computing courses and degrees where computing is presented in a relevant problem-solving domain, where the female-to-male ratio is much more balanced (or even majority, as in our Human-Centered Computing Ph.D. program), and where women and under-represented minorities perform as well as white males.

We have extended existing alliances and partnerships to address the entire pipeline in the state of Georgia by applying research findings and best practices (especially in curriculum). While addressing all aspects of the pipeline all at once nationwide is too expensive and too difficult, we can focus on the pipeline in one state to create a national model. We have assembled a statewide, vertical alliance where our strategy is to focus on communicating the image of innovative, welcoming, and relevant computing in order to support women and minorities pursuing careers in computing from pre-high-school, through high-school, undergraduate, and graduate education with new kinds of M.S. and Ph.D. degrees. In this effort we:

- Attract girls into computing with activities in camps and afterschool programs.
- Create role models for students by placing minority and women undergraduate students as assistants in high school computing classes.
- Provide opportunities for real computing activities with graduate student (minority or female) role models in an on-line space.
- Teach high school teachers how to teach computing using motivating examples.
- Offer workshops to university computing faculty on new approaches to motivate computing education.
- Support computing faculty across the state in offering their own summer camps, with training, curriculum, and seed funding, to recruit students into their computing programs.

Our plan will result in a doubling of the number of high school teachers in Georgia capable of teaching advanced placement (AP) Computer Science, 50% increase in the number of high schools offering CS AP, a doubling of the percentage of women and minorities taking CS AP, an increase in the percentage of women and minorities in our graduate computing programs, and a doubling of the percentage of women and minorities in undergraduate computing courses in Georgia.