Human-Amplifying and Transformational Computing

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Biographical Sketch

Tiffany Barnes is an Associate Professor of Computer Science at NC State University and received her PhD from NC State in 2003. Dr. Barnes received an NSF CAREER Award for her novel work in using data to add intelligence to STEM learning environments. Dr. Barnes is co-PI on the $9 M NSF STARS Alliance grants that engage college students in outreach, research, and service. She has received ~$2 M in funds as PI from the National Science Foundation, NASA, and industry sources to research effective ways to build serious games for education, exercise, and environmental awareness; promote undergraduate research; and develop new ways to teach computing. Dr. Barnes serves on executive boards for ACM SIGCSE, EDM, and AIED. She has been on the organizing committees for several conferences including Educational Data Mining and Foundations of Digital Games, and has served as associate editor for the Journal of Educational Data Mining and was a guest editor for IEEE Computer Graphics and Applications.

Abstract

Human-centered computing has at its core the idea that humans are central to many of the things we create and use computers to do. On a trip to Haiti, I began to rethink my own perspective on computing – what, exactly, are computers and computing for? Computing is and should be about amplifying people – to be more of what we think of as "human". Not only can computing amplify intelligence – it can amplify compassion, communication, understanding, and creativity – and even transform people and our society. Programming languages like Alice, Scratch, and Snap and the creation of serious games highlight the importance of leveraging creativity to inspire the next wave of transformative innovation in computing. In this talk I'll lead in with this idea and give an overview of my work including: the new CS Principles Advanced Placement course (and our Beauty and Joy of Computing version of it), the STARS Alliance for broadening participation, creating games for education, exercise, and energy, and using data to personalize learning experiences.