

# **ENGAGING MIDDLE AND HIGH SCHOOL STUDENTS THROUGH ROBOTICS COMPETITIONS: PATCHING POSSIBLE LEAKS IN THE COMPUTER SCIENCE PIPELINE**

Thomas L. Buck and Thomas Gibbons  
Department of Computer Information Systems  
College of St. Scholastica, Duluth, MN

## **ABSTRACT**

Although Computer Science jobs represent the fastest growing segment of jobs in all STEM fields, in many of the middle school and high school robotics competitions the abstract logistics and programming of Computer Science are often overshadowed by the tangible building and designs of Engineering, not separating the computing discipline from the mechanical as a specific field of study for college and/or career. In this paper we analyze different engagement features of secondary education robotics competitions that identify with, or directly relate to, Computer Science through the use of tangibles, competitive environments and teamwork, all within the context of the computing discipline “pipeline” from middle and high school to college/university, and ultimately a career. The authors will provide a summary of current research, and examples of how each feature can be incorporated into Computer Science programs to recruit and retain students in higher education.