**Practical Application of Robotics Competition for STEM Education**

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**Abstract**: As robots become an increasingly integral part of our society, the study of robotics has a great potential to influence Science, Technology, Engineering and Mathematics (STEM) education. Robotics is a multidisciplinary field and requires an organic integration of resources and optimized operation for its impact to be maximized. This paper presents the practice and significance of using a robotic submarine competition (Robosub competition) to improve the engineering education of STEM majors at California State University, Los Angeles (Cal State LA). The competition requires students to design and build a submarine robot to autonomously navigate through a series of tasks that mimic ongoing research in robotic systems. First, the organization of this program at Cal State LA is introduced, including the involvement of faculty advisors, a student organization, and senior design teams. Second, the integration of this program into students’ curricular and extracurricular activities are discussed. Many design tasks can be used strengthen a variety of courses throughout almost all engineering and computer science disciplines. Aside from that, student participants obtain many core skills that are critically important for them to be successful in their future careers. These skills include major related technical skills and beyond, such as communication, leadership, management, and cooperation skills. Third, the impact of the competition among student participants, the engineering program, and the institution are summarized. Although this program has been only established for about two and a half years at Cal State LA, many positive results in improving college engineering education have been achieved. Finally, discussion of the existing challenges to maintain the program long-term and possible future solutions are presented.