

Technical University of Denmark



## Training Engineering Disciplines and Skills through Robot Projects

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## **Training Engineering Disciplines and Skills through Robot Projects**

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The popularity of robots in educational activities increased the last 10-15 years. Engineering education all over the world includes courses and projects involving design, use and programming of robots in a variety of programs at technical colleges and universities. At the same time there is a growing interest to work with robots. Robotic skills are also highly requested in industrial companies. At the Technical University of Denmark, DTU Diplom, we have several projects involving building and programming robots in our bachelor programs in Electronics, Computer Science, IT and Mechanical Engineering. This presentation deals with our experience in robotic activities in different programs in order to enhance understanding of mathematics, physics and different technical disciplines in the named programs. We also observed the increased motivation for learning theory when we combine traditional theoretical courses with robotics projects. Teamwork is also very important skill today for engineering students; they need to be trained to tackle engineering projects by teamwork. Problem oriented education and teamwork increases the motivation of our engineering students to learn the theoretical parts of the curriculum, especially those who are interested in a practical approach to mechanics, electronics or software. We organize also robot-competitions at the end of the semester and this is additionally a substantial motivation factor for our students. The need to function on an engineering team is widely recognized in engineering education and in particular using contests seems to be an effective training exercise and measure of teamwork skills. Some cases of robot projects' influence on students' learning and achievements are presented. Students' own conclusions what impact the robotic projects have had on their abilities and understanding of different disciplines, theoretical and more practical engineering skills, will be also presented.