

## **Abstract**

The implementation of robots in workshops has raised requirements related with the use and management of robotized sites. These requirements take place throughout the definition phases of the robotized site. The need to simulate and control the industrial tasks has led to develop tools that aim to provide aid to the user, e.g. the optimum robot trajectory to accomplish a specific task, the placement of the robot in its working environment etc. Additionally, the simulation of robotized sites carries potential benefits in terms of cost as well as time management in industrial and automation projects. In this work, we propose a general approach based on SolidWorks Application Programming Interface (API) to simulate a serial robot's task. The approach is mainly based on 3D models of the robotized site and time optimization ensuring accessibility and collision avoidance. To demonstrate the approach, a number of points representing a frequent and an important task (spot welding) by an industrial robot has been presented. The proposed simulation strategy gives collision free trajectory of robot motion which can be directly mapped to a real robot. Moreover, the approach provides the possibility to cope almost all problems related to the real implementation of serial robots