

University of Southern Denmark
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RobWorkMill

Milling software for robot with 6 or more degrees of freedom

Technical Field

- Production Technology
- Software

Business Opportunity

- Investment
- License

Current State of technology

The invention is ready for implementation in companies. The Danish project "Unique Concrete Elements" has given a lot of experience in milling and spraying with the use of the invention on a Fanuc 2000i robot at the Danish Technological Institute. Furthermore we have a small prototype in our robot laboratory with a Fanuc 200iB robot for testing the invention and for demo purposes. We have also made tests with a Kuka robot for interfacing purposes. The main work that remains is the interfacing to different robots, but this work is rather trivial to do and is the job of the robot integrators.

Applications

The invention can be used for different process types in the material industry. Like cutting, spraying, grinding, welding, water jet cutter, plasma cutter, laser cutter, drilling, countersink etc.

Product Advantages

This invention makes it possible to exploit the full working area of a robot without any collision with the work piece and the walls of the robot cell. The robot must have 6 or more degrees of freedom in order to use this invention.

The Technology

The invention uses the possibility of rotating the tool around the tool axis simultaneous with a motion in the working area. An example is the milling process. It has no influence on the process how the milling tool is rotated around its rotation axis; therefore the robot can utilize its working area in order to avoid collisions by rotating the tool around its rotation axis. The invention is integrated in an off-line computer simulation software (RobWorkMill) that computes the robot motion from a standard CAM system. The CAM system supplies a path for the process tool from a CAD model. The path is used for generating feasible joint positions for the robot for the desired process path. The output is a complete description of the robot motion that can be transferred to the robot through a suitable software interface.

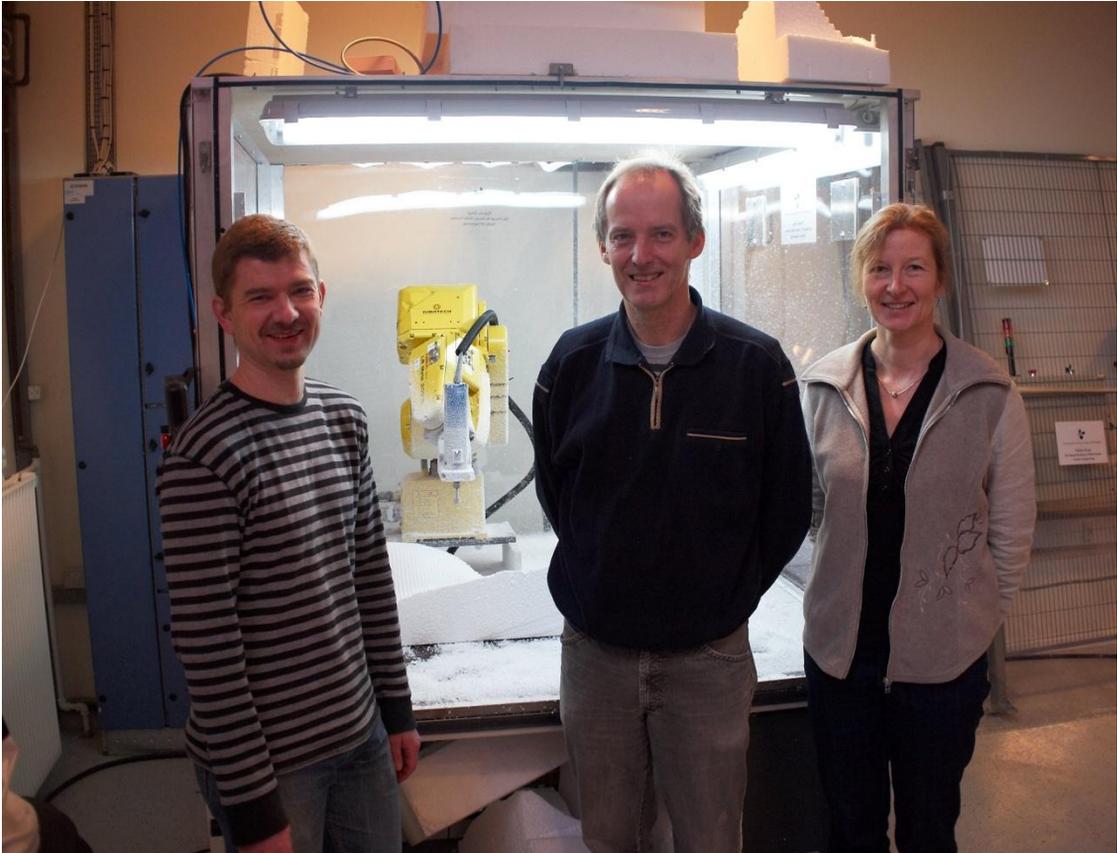
Intellectual Property Rights

All intellectual property rights owned by the University of Southern Denmark. Patent application filed December 2009.



The Inventors

The Maersk Mc-Kinney Moller Institute is part of the Faculty of Engineering at the University of Southern Denmark. The institute performs primarily research within the field of robotics with the aim of developing robots that can optimize industrial and medical processes as well as other purposes. The Institute's Robotics Group was established back in the 1980's through an extensive collaboration with Odense Steelshipyard concerning automatic motion planning for welding robots in one-of-a-kind production. The overall focus of the work in the Robotics Group has since then been automatic robot motion planning including collision avoidance for industrial one-of-a-kind applications. In addition mathematical modeling of various processes has been considered: handling, surface treatment, grasping.



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