

Technion-Israel Institute of Technology
Computer Science Department
Center for Graphics and Geometric Computing

CGGC Seminar

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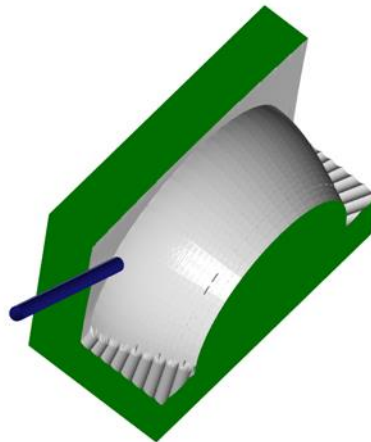
Computer Science Department, Technion-Israel Institute of Technology

Precise Algebraic-based Swept Volumes for Arbitrary Free-form Shaped Tools towards Multi-axis CNC Machining Verification

This work presents an algebraic based approach and a computational framework for the simulation of multi-axis CNC machining of general freeform tools. The boundary of the swept volume of the tool is precisely modeled by a system of algebraic constraints, using B-spline basis functions. Subdivision-based solvers are then employed to solve these equations, resulting in a topologically guaranteed construction of the swept volume. The presented algebraic-based method readily generalizes to accept tools of arbitrary free-form shape as input, and at the same time, delivers high degree of precision.

Being a common representation in CNC simulations, the computed swept volume can be reduced to a dexels' representation. Several multi-axis test cases are exhibited using an implementation of our algorithm, demonstrating the robustness and efficacy of our approach.

This work is jointly done with Gershon Elber and Denys Plakhotnik.



The lecture will be held on Sunday, 11.6.2017, at 13:30, Taub 337

הזמנה זו מהווה אישור כניסה עם רכב לטכניון