Rapid Prototyping
Chairs: Ren C. Luo, Dinos Mavroidis

Deformation Transition Graphs in Forming Operations of Rheologic Objects
S. Hirai, S. Tokumoto and Y. Fujita
Ritsumeikan University

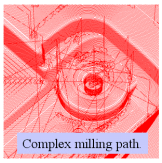
Rapid Prototyping of Robotic Systems
J. Won, K. DeLaurentis and C. Mavroidis
Rutgers University

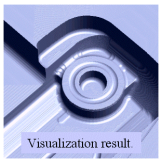
- Rapid Prototyping fabrication of non-assembly robotic systems
- Using Stereolithography and Selective Laser Sintering
- Successful non-assembly multi-joint, multi-DoF one step fabrication
- Several robotic systems fabricated using this technique

The Development of LCD Panel Display Based Rapid Prototyping System for Advanced Manufacturing
R. C. Luo, J. H. Tzou and W. Z. Lee
National Chung Cheng University

Fast Visualization of NC Milling Result Using Graphics Acceleration Hardware
Masatomo Inui
Ibaraki University

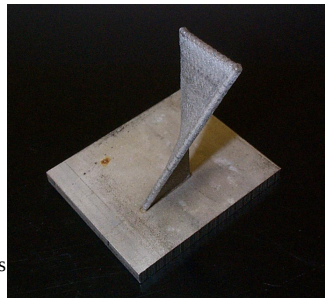
- Fast and fine visualization of the NC milling result for avoiding gouging problems.
- Geometric milling simulation is transformed to a 3D rendering problem. Graphics hardware acceleration.
- Complex milling result can be visualized in a second.
- Integration with the path generation software is our future work.





Motion Planning for a Direct Metal Deposition Rapid Prototyping System
D. M. Hensinger, A. L. Ames and J. L. Kuhlmann
Sandia National Laboratories

- Extend 2.5 Dimensional Direct Deposition Manufacturing System to 3D
- Exploited Access to CAD and Flexibility of Robotic Positioning
- Produced Unique 3D Parts from CAD Data using 6 DOF Robot
- Application of Robotic Systems to Deposition Manufacturing Shows Great Potential



Agent-Based Product Design and Planning for Distributed Concurrent Engineering
J. Sun[1], Y. F. Zhang[2] and A. Y. C. Nee[2]
[1]Gintic Institute of Manufacturing Technology and [2]National University of Singapore

- Motivation: to integrate geographically dispersed product design, manufacturability analysis, process planning, and assembly
- Proposed Approach: a heterogeneous multi-agent system
- Experimental Result: a prototype for concurrent design and planning on machining processes
- Discussion and Conclusion

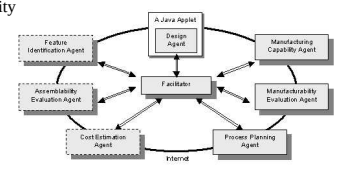


Figure. System Architecture