

## **8-axis Surface Sculpturing System by Heated Cutting Tools**

Ryo Suzuki, Jiang Zhu, Tomohisa Tanaka, Yoshio Saito

### **Summary**

In this research, a surface sculpturing system based on 8-axis robot is proposed. The 8-axis machining system is composed of a 6-axis manipulator and a 2-axis worktable. It carves block of polystyrene foam by heated cutting tools. According to the preliminary experimental result, the parameter of heated cutting tools which are cutting speed and current value is to be best suited. In the CAD/CAM software, the system automatically generates semi-finish model and rough-cut model from the input model, which are composed of large flat facets, and easy for material removal process. Then according to the cutting tool path generated by the path-planning algorithm, the 3D model is efficiently sculptured as a whole unit.