Production of building materials using Articulated

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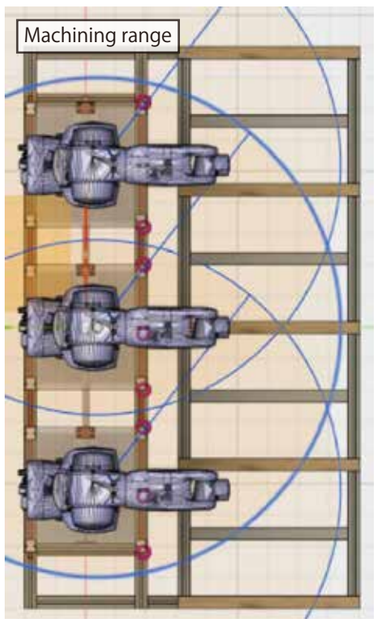
Robot as a Machine tool

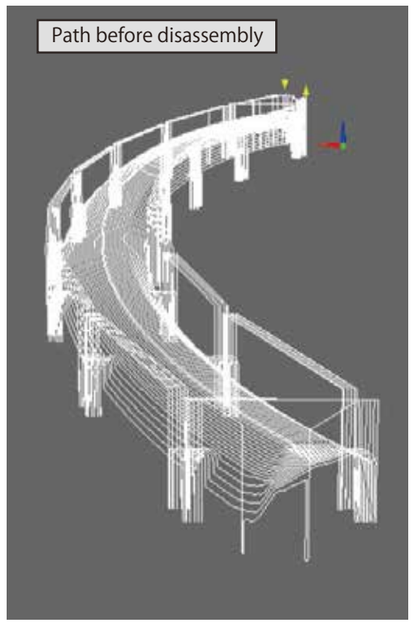
An articulated robot has a mechanism like a human arm and can perform various work. we practice processing wooden parts such as A model of traditinal wooden architecture by by the robots that equip various tools. This time, we attempt processing parts that have actual size of building by enlarging a working range of the robot.

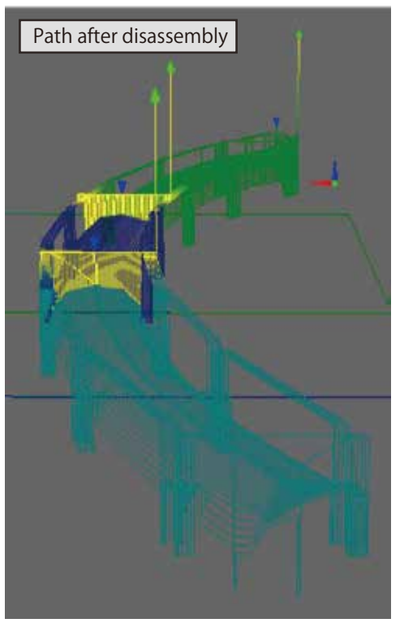
1.An uni-axial traveling rail

Setting the Robot on the uni-axial traveling rail for expand machining range.

2.Machining path

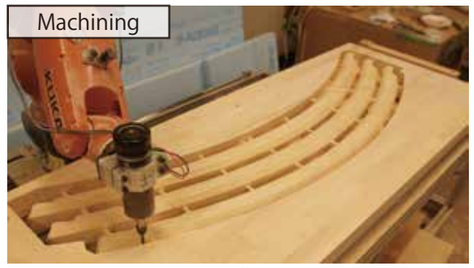




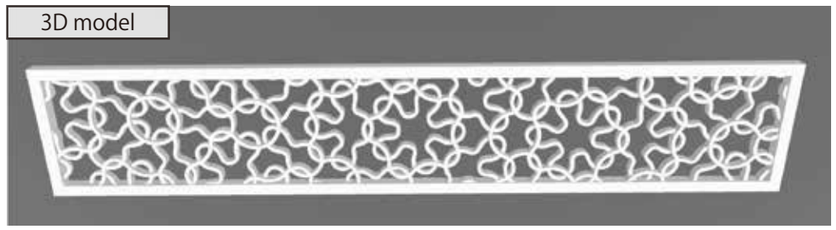


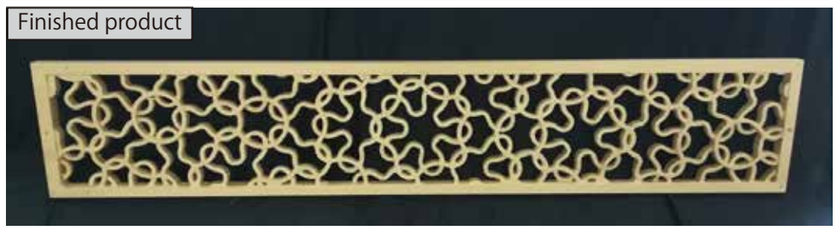
Dividing machining paths by machining range of each positions that are pre-determined. The robot moves to each position and works by divided paths.The figures show machining range, path before disassembly and path after disassembly.

3.Test

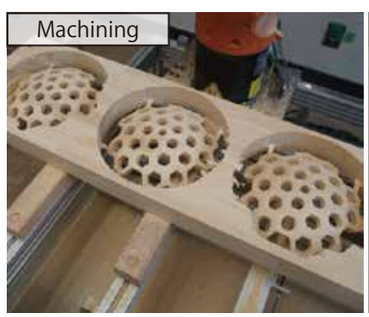


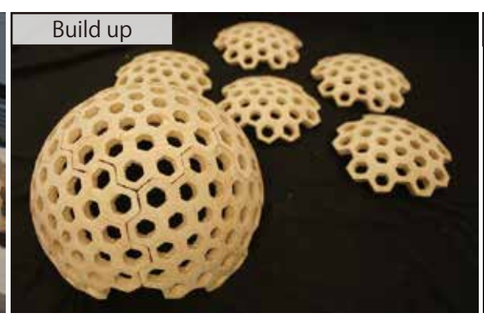
The handrail has 2600mm height and continuously curved surfaces. Three joints are also processed well.





The transom has six feet width and complex shapes that are based on the penrose tile. It is difficult to hand-craft this design.





The Goldberg polyhedron puzzle is not a building part and has no big parts, but we could machine it efficiently by placing each parts side by side. In the future, we plan to built a full-size traditional wooden architecture using robots.