

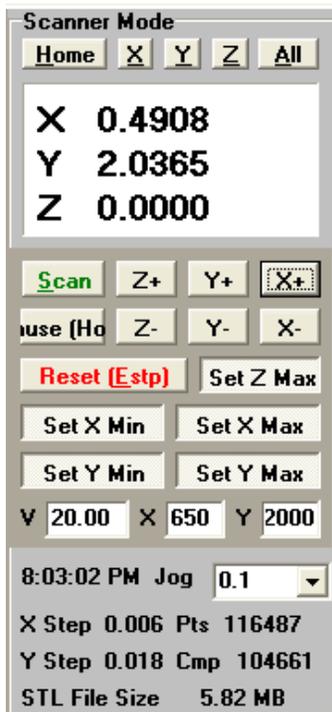
3D surface scanning with a TP-100 probe

Following is some detail about surface scanning and then machining the results:

1) Select a target object to scan. Mount it in such a manner that it will not move when probed. The object should not be too soft like fruit, flesh, or foam rubber. This panther is made from hard plastic and has a slight amount of give on the legs. In this case, it is mounted to the aluminum plate with heat melt glue.



Here is the setup under File-Digitize-3D Probe Scan:



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The Probe was jogged to the front left corner, at a depth which would permit scanning the entire top surface. All coordinates were then zeroed with the All button. Set X min button and Set Y min button were then clicked.

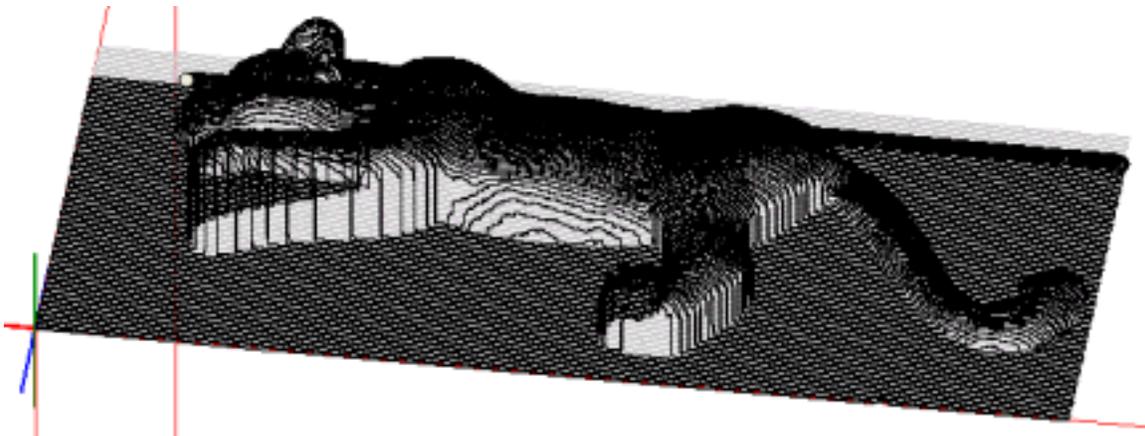
The using the 1.000 and .100 jog buttons, the Z was jogged +1.00, the X was jogged +5.2, and the Y was jogged +2.5 inches.

In this position, Set X-Y-Z max buttons were all clicked.

V-velocity was entered as 20 ipm, Steps x is entered as 650, and steps y is entered as 2000. DeskCNC immediately calculates that these values translate to a .006 increment in X, and a .018 step over in Y. The number of points to collect is 116487, and the final .stl file will be 5.82 mega bytes.

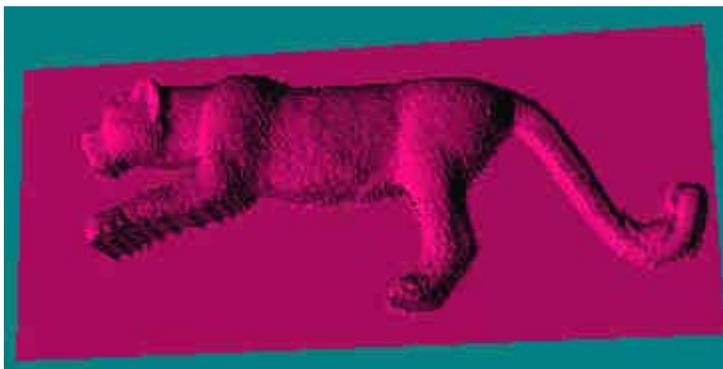
Click scan to start the scanning. cmp is an on-going count of number of completed points, and the time shown is the estimated time of completion. This scan took about 4 hours.

In-process screen shot during the scan:



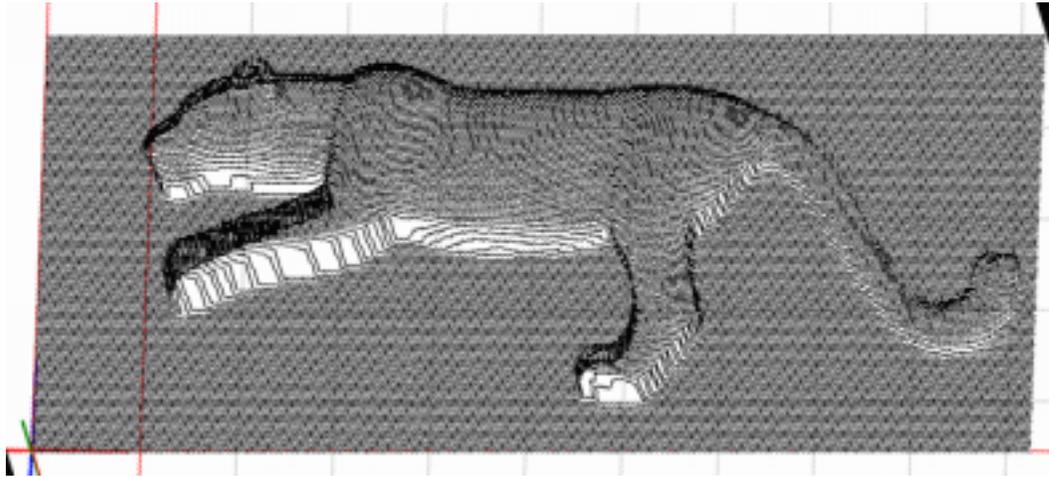
After the scanning is completed, The data is filtered, smoothed, and reverse compensated for the probe tip diameter, then a file save dialog asks for the name of the .STL file.

The .STL file opened in DeskCNC, rendered view:



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Cut file displayed in DeskCNC, after Z scaling, filtering, smoothing, and reverse compensation:



Cut file, with Z depths scaled by 40% to make a bass relief with no more than .25 depth of cut. Model was roughed with a .25 in dia, flat end router bit, then finished with a .125 ball end cutter. The Z scaling was done in Vector Cad-Cam, an alternate tool to scale the Z depth is Accutrans 3D.

This is as cut, with no sanding or finishing except the router cuts. The material is a pine 2 x 4 board. It was machined on a K2CNC1414 router with DeskCNC servo Sys-3. The spindle is a PorterCable trim router w 1/4 in collet.

Roughing and finishing were at 20 ipm. Total cutting time of approximately 1/2 hour. Finish settings were .001 along the X direction, and .020 step over in Y. .060 in stock material was left after the roughing pass.



The original .Stl File available for download. Please note that the leopard's spots are not reproduced.