RECCAD Test Objects I*

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Abstract

This report describes the first set of the objects designed and machined to provide a ground truth for testing reconstruction and modelling algorithms. Drawings, dimensions, pictures, and illustrative range data are included.

The algorithms for surface reconstruction and object modelling have to be tested on real data. This report describes five simple objects that were designed and machined to provide a ground truth for testing the algorithms for reconstruction and modelling of surfaces by the means of active and passive vision.

All objects have planar faces execept for a few "rounded" corners due to manufacturing. The objects were manufactured from a special plastic resembling nylon and painted. Original material is partially transparent what causes troubles to active range sensors as the light spreads in the objects and forms false points near edges. Overall precision of manufacturing is about $\pm 0.2\ mm$. Figure 1 shows illustrative drawings of the objects altogether with their gray level images.

In order to illustrate the appearance of the scanned data, we show reconstructed points for one scan of each object, Figure 3. Data were reconstructed using the Laser Plane Range Finder developed at the Computer Vision Laboratory [1].

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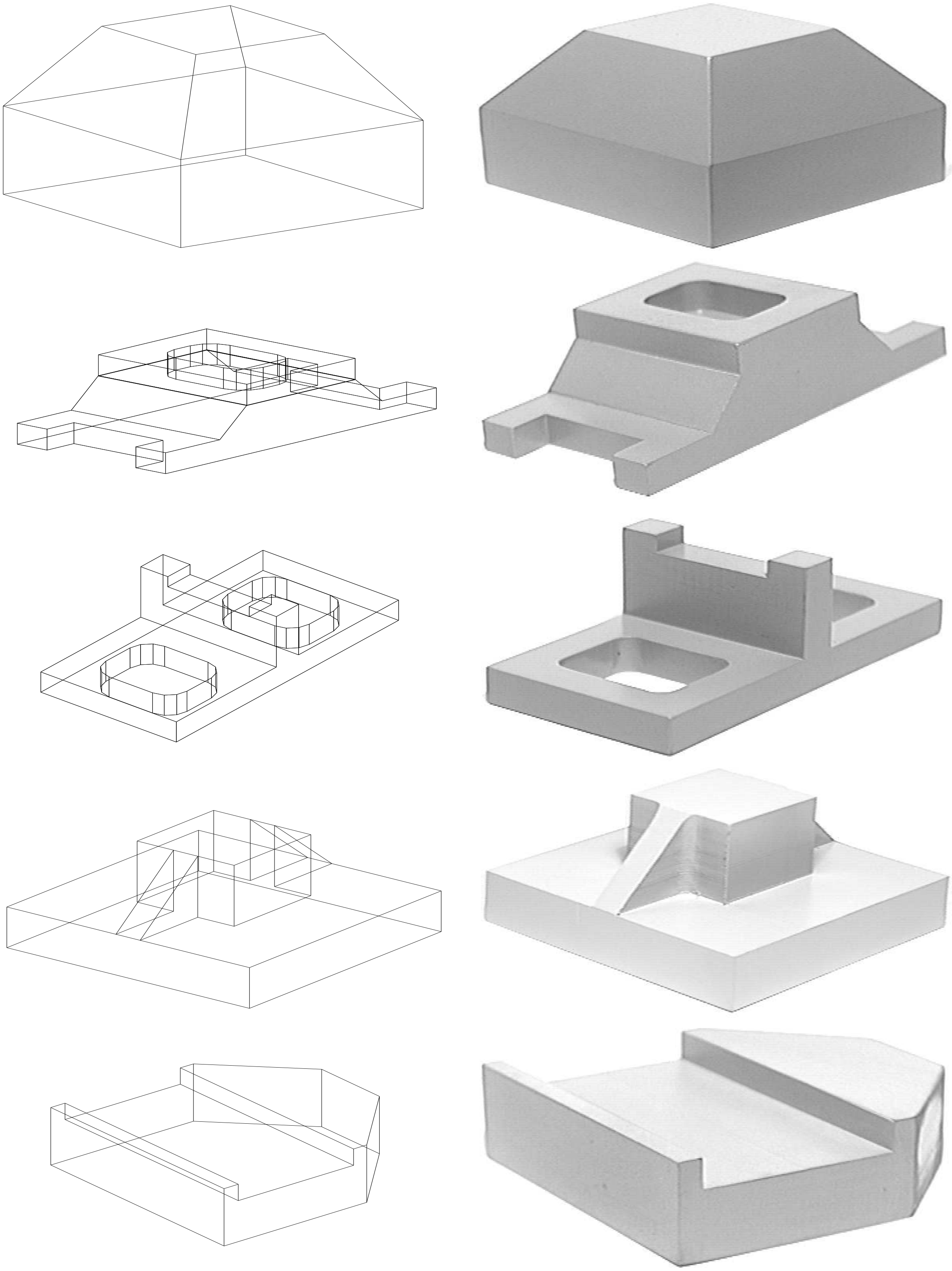

Figure 1: Test objects.

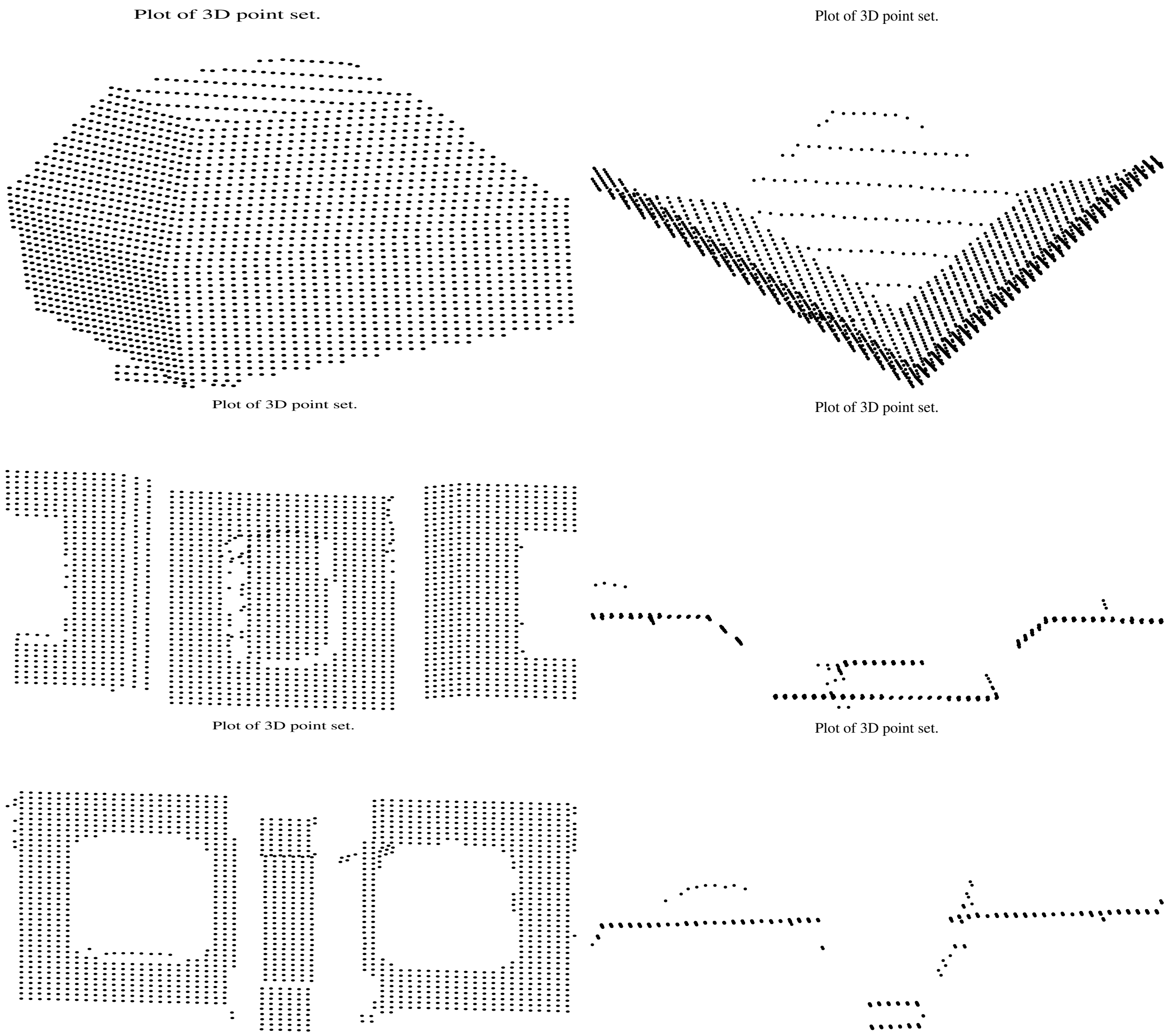

Figure 2: Range data.

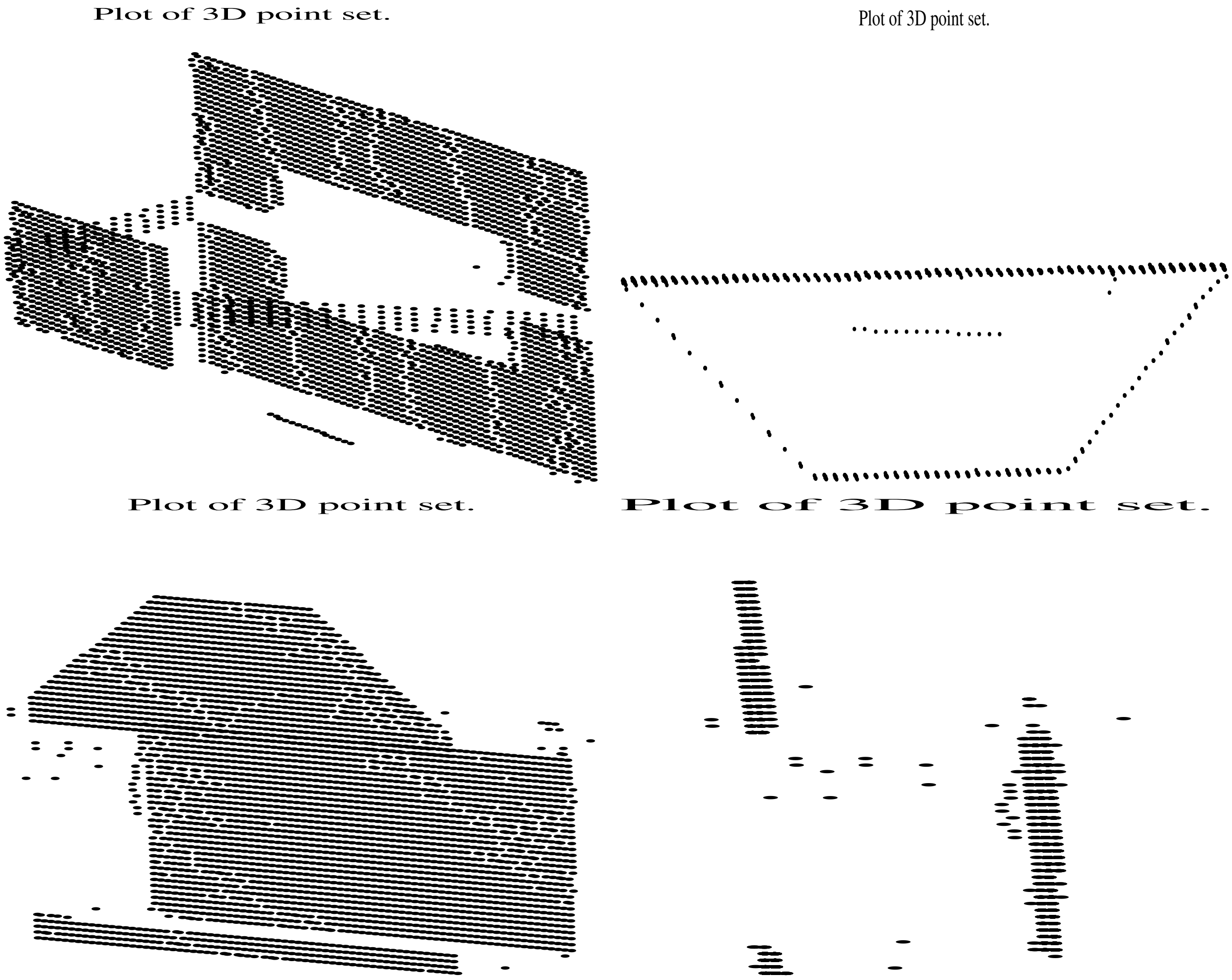

Figure 3: Range data.

1 Documentation

In this section we show the dimensions of the objects. Real dimensions should not differ from the planned ones more than by ± 0.2 mm. Table 1 shows basic parameters of the objects.

Material	nylon
Surface finish	painted with opaque light gray dye
Machining	semiautomatic milling machine
Precision	± 0.2 mm.

Table 1:

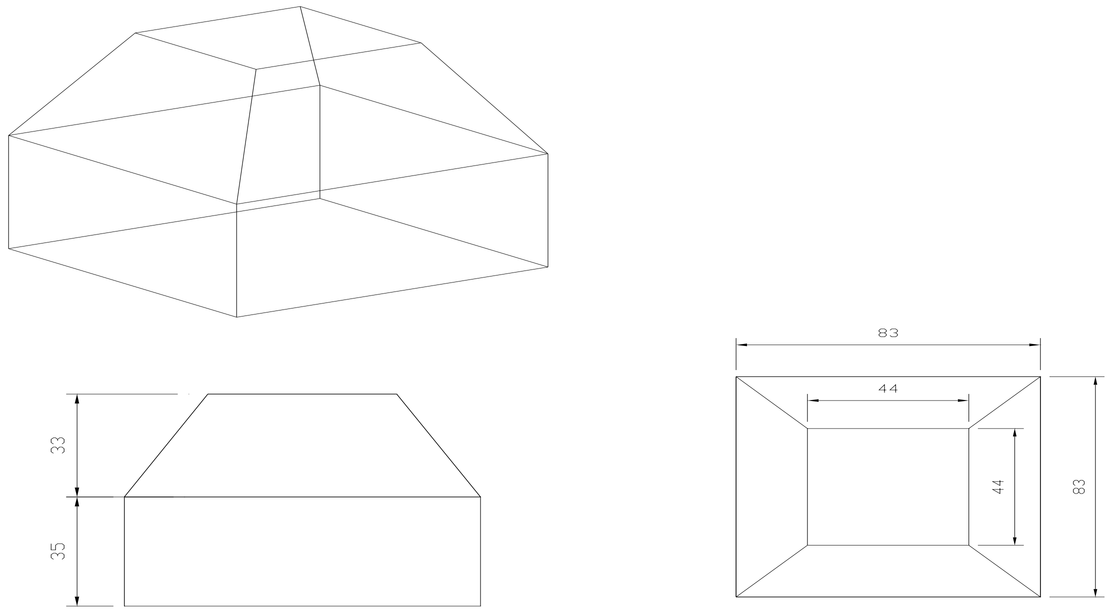

Figure 4: Object No. 1

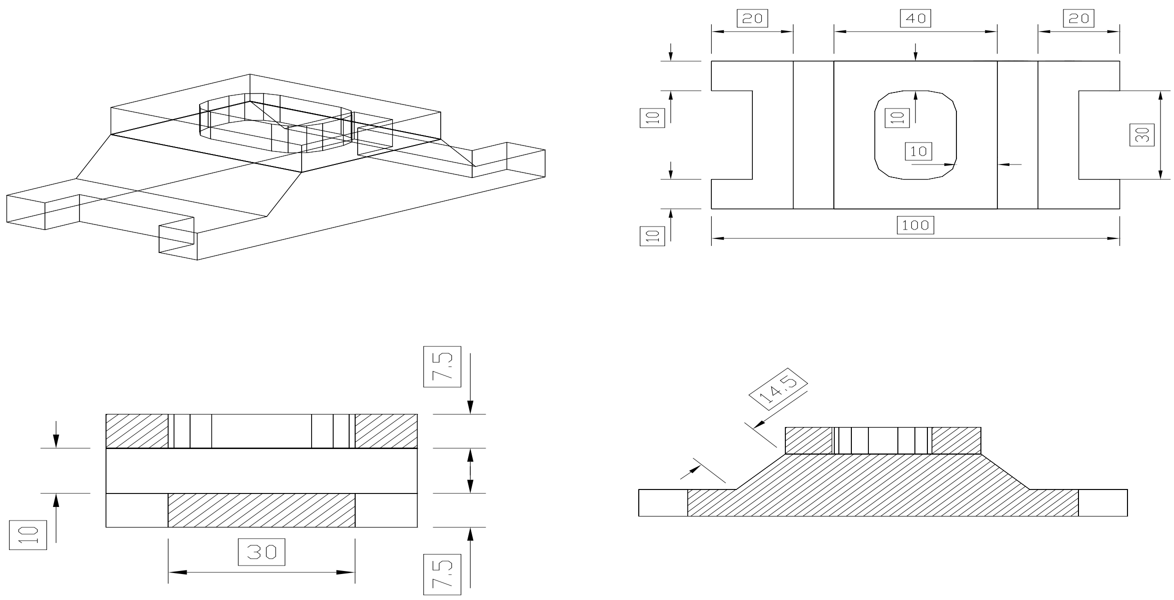

Figure 5: Object No. 2

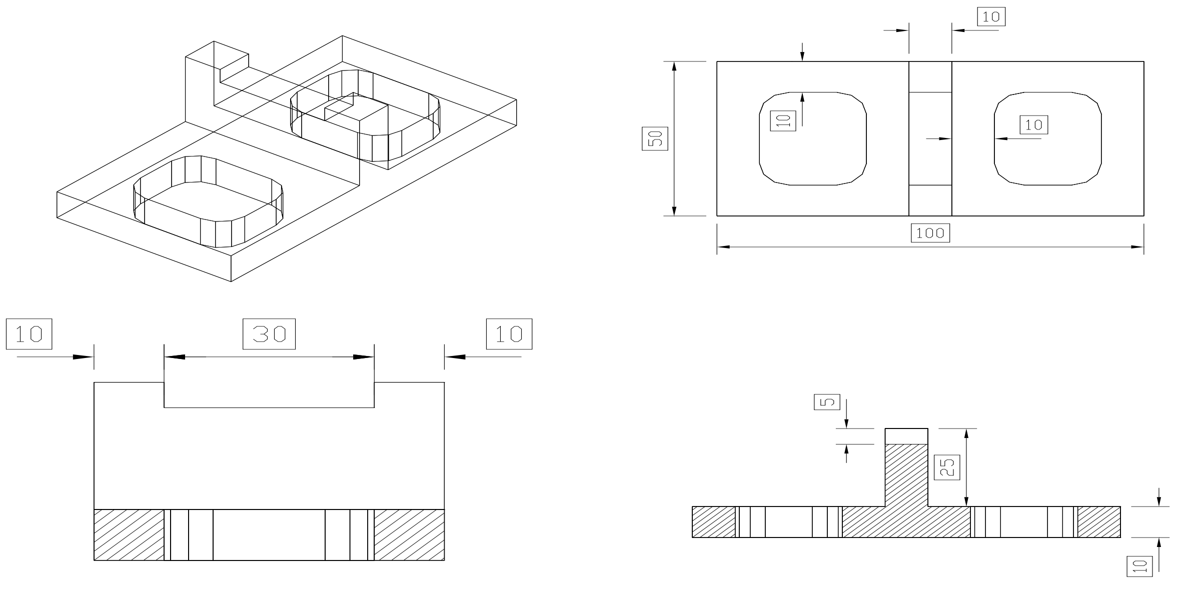

Figure 6: Object No. 3

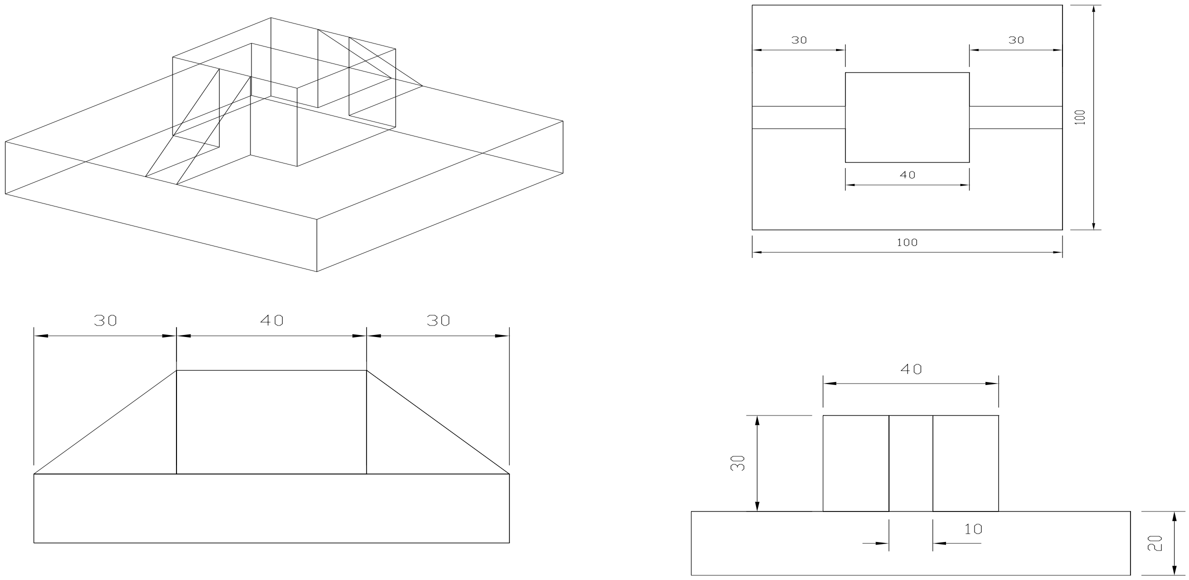

Figure 7: Object No. 4

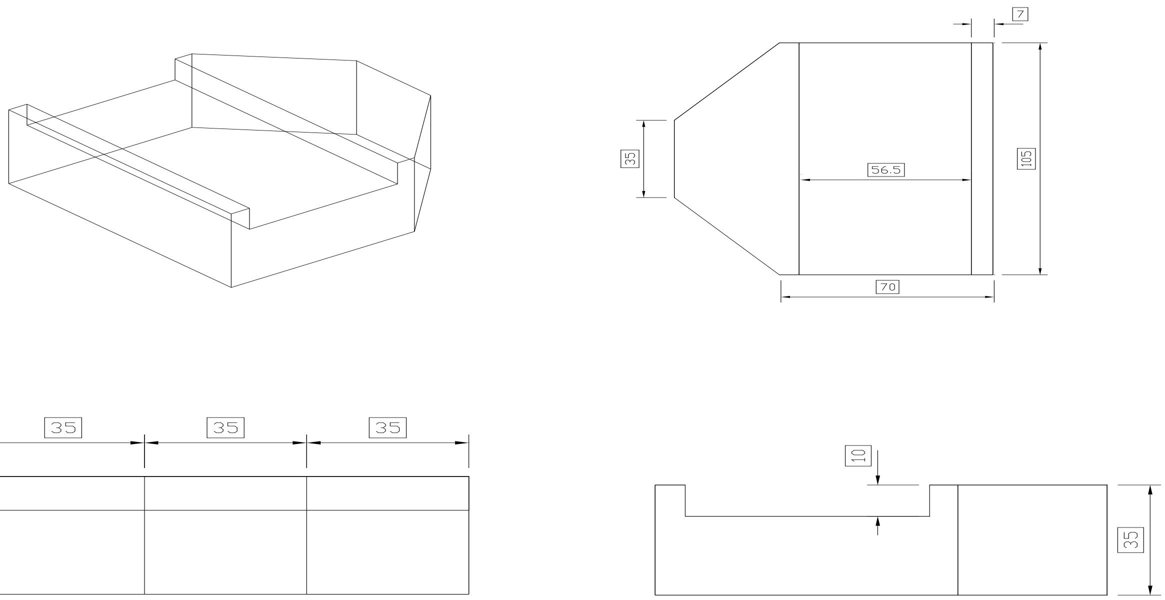

Figure 8: Object No. 5

References

[1] Tomáš Pajdla. Laser plane range finder - the implementation at the CVL. Technical Report Nr. K335-95-98, Czech Technical University, Prague, October 1995.