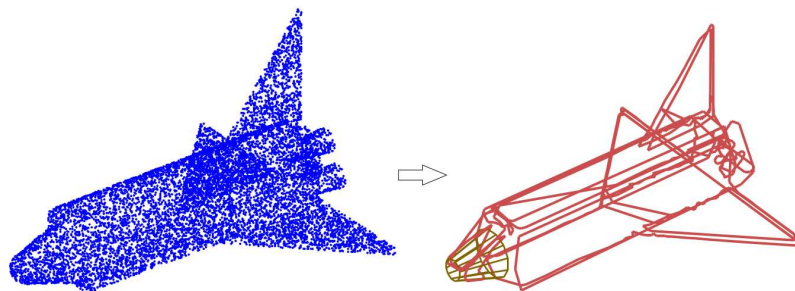


Extension of an existent object recognition

The computer-assisted reproduction of artificial objects from the environment is a much discussed topic in image processing, and is used, among other things, in autonomous navigation of mobile robots. The foundation for this work is a 3D point-cloud which is generated with the aid of visual sensors. A special algorithm searches geometric primitives (plane, cylinder, sphere and cone) in the point-cloud. In the next step, it is necessary to process the primitives, because they do not reproduce the original surface to satisfaction.

In this work, two topics of the process are explored: On the one hand, the surfaces are tested for identical parts. If one surface is a part of another surface, it has to be detected and arranged rationally. Because the surfaces can be described with only a few parameters as geometrically exact, it is possible to have simple calculations. Consequently, an efficient algorithm is guaranteed. On the other hand, holes are located in discovered planes. The planes are tested in their areas, which have a low point density relating to their environment. The work provides an approach to systematically find these parts and define new borders for the planes.

A verification with simulated point clouds shows the successful use of the developed algorithm.



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