

# Experiments of Robotic Assembly Instructed by Situated Natural Language

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## Abstract

In this video we show some experimental results achieved by using situated natural language to instruct artificial systems for assembly. Motivated by interdisciplinary research in linguistics, cognitive psychology, artificial intelligence and sensor-based robotics, we examine the intelligent capabilities of humans in solving an assembly task with a partner, and then attempt to transmit the insights gained to construction of artificial systems, [RW96].

Firstly, the *CODY Virtual Constructor* demonstrates several samples of interactive assembly in a virtual environment, [WJ96]. The basic scenario is the assembly of a toy airplane from the parts of a wooden construction kit. Since the situation in the changing task environment is dynamically conceptualised, not only single parts, but also constructed assembly groups, can be named in natural language instructions.

Secondly, we introduce a real robotic system consisting of two cooperating PUMA 260 manipulators, several cameras and force/torque sensors, [ZK95]. Techniques of visual servoing and sensor-based learning control have been applied so that elementary operations like grasping, insertion and screwing can be robustly performed, [ZvCK]. A sequence of these operations are executed under the instruction of natural language.

## References

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