

Generation of Hypothetical Landmarks Supporting Fast Object Recognition with Autonomous Mobile Robots

Christof Eberst, Johann Sicheneder

Department of Process Control Computers
Prof. Dr.-Ing. G. Färber
Technische Universität München
80290 Munich, Germany

Abstract

This paper describes an approach to exploit hypothetical landmarks, based on uncertain suppositions about objects for feature detection, localization, exploration and object-recognition. Information gained from sensors is combined with additional information obtained from reasoning about the environment. Object recognition based on the generation of plausible completions of explored landmarks and verification by matching in 3D, fairly independent of the robot's behavior, is described. Generated hypothetical landmarks that are missing for suppositions about objects are directly inserted in a *dynamic local map* of the environment and verified in consecutive sensor-readings. The usage of confirmed and rejected landmarks for the verification of the object hypotheses and for the feature detection and exploration is discussed.

Published in "IEEE/RSJ Int. Conf. on Intelligent Robots and Systems 96", Osaka, Nov 1996, pages 818 - 823.