摘　要

从机器人诞生以来，人们无时无刻不想着有朝一日能和机器人自由自在的进行交流。对机器人行为控制的研究也一直都是人们在探索的方向，市面上有许多种可以进行机器人仿真的实验平台，本文中使用到的 V-Rep 就是其中一员。V-Rep 软件是目前市面上推广度较低的一款软件，这款软件引自瑞士，在国内的实用度还不高，但在机器人的仿真模拟方面要比其他很多软件表现得更加优秀。机器人设计不仅包括高智能的信息处理，更需要最基础的行为控制。本文的主要内容就是介绍基于 v-Rep 虚拟实验平台进行的机器人行为控制仿真。总体思路是在学习 V-Rep 软件的基本原理和操作方法后设计仿真方案，利用该平台得到仿真结果。在仿真过程中，我们会使用 V-Rep 进行仿真场景和仿真对象建模，对模拟的仿真对象进行设计和动力学设计，并通过 V-Rep 自带的内嵌脚本对其进行简单的行为控制。而后联合 V-Rep 虚拟平台与 Matlab 编程软件，使二者互联，做到通过 Matlab 远程启动 V-Rep 仿真，并在 Matlab 中编写合适程序实现仿真对象更加复杂的运动控制。最后对仿真的步骤和结果进行分析，总结仿真软件特点和仿真效果。

关键词：机器人；机器人行为控制仿真；V-Rep；Matlab

ABSTRACT

Since the birth of the robot, people have been hoping to communicate with the robot freely and day by day. Research on robot behavior control has always been the direction people are exploring. There are many kinds of experimental platforms on the market that can be used for robot simulation. The V-Rep used in this article is one of them. V-Rep software is a software that is currently less popular in the market. This software is imported from Switzerland and is not very practical in China, but it is better than many other softwares in robot simulation. Robot design not only includes highly intelligent information processing, but also requires the most basic behavior control. The main content of this paper is to introduce the simulation of robot behavior control based on v-Rep virtual experiment platform. The general idea is to design the simulation scheme after learning the basic principles and operation methods of V-Rep software, and use the platform to obtain simulation results. In the simulation process, we will use V-Rep to simulate the simulation scene and simulation object, design and dynamic design the simulated simulation object, and perform simple behavior control through V-Rep's built-in embedded script. . Then combined with V-Rep virtual platform and Matlab programming software, the two are interconnected, so that V-Rep simulation can be started remotely through Matlab, and a suitable program can be written in Matlab to realize more complex motion control of the simulation object. Finally, the simulation steps and results are analyzed, and the simulation software features and simulation effects are summarized.

Keywords：robot；Robot behavior control simulation；V-Rep；Matlab

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