

果蔬采摘机器人末端执行器研究综述

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摘要: 从果蔬采摘的特点出发,综述了国内外各种果蔬采摘机器人末端执行器的研究现状及特点,指出末端执行器的通用性与系统成本、使用成本之间的矛盾是制约采摘机器人发展与应用推广的关键难题。提出将欠驱动多指手作为果蔬采摘机器人的末端执行器,同时分析了欠驱动多指手国内外研究现状,并从欠驱动多指手的机构特点、抓取模式和综合成本等方面说明了这一思路的可行性。 Research progress and features of various end-effectors for fruit-vegetable harvesting are reviewed. It is pointed out that the conflict between the universal applicability of the end-effectors for fruit-vegetable harvesting and system cost as well as application cost is a main factor restricting the future development and application of fruit-vegetable harvesting robot in China. The underactuated multi-fingered hand is proposed as the end-effector for fruit-vegetable harvesting, and then a detailed review of the research progress of underactuated multi-fingered hand is presented. The feasibility of using the underactuated multi-fingered hand in fruit-vegetable harvesting is illustrated in terms of mechanism features, grasping modes and comprehensive costs.

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