

基于 STM32 的自动跟随小车设计

摘要：现代生活中，随着人们生活水平的提高，以及科技发展水平的不断进步，使得很多东西越来越智能,越来越具有科技感，在这些科技发展中智能小车这一技术就是一个非常好的例子。通过模拟电子技术，数字电子技术，单片机控制原理以及电路原理等理论对控制器硬件电路、通讯接口及控制程序进行设计。自动跟随功能的小车是以 STM32 为主要的核心控制器，配上电源模块、电机驱动模块以及超声波模块进行运作完成任务。使用了相应的编程语言进行编程（C 语言），每一个模块通过硬件实物端口接线，最终实现所预期的功能。基于 STM32 的自动跟随小车的设计过程：自动跟随小车设计方案、软件设计、硬件型号选取，硬件平台的搭建和连接、本设计的基本原理的深入了解、电路图的绘制和实现、完成相应设计工作后进行实物的制作和后期成品的调试。最后，对已完成的各个模块进行系统调试，将各机械零部件进行总装，连接传感器检测原件、硬件电路，调试系统控制程序，最终达到满足本装置的全部设计与应用要求。

关键词：自动跟随；超声波；STM32 单片机

Automatic follow car based on STM32

Abstract: In modern life, with the improvement of people's living standard and the continuous progress of science and technology development, many things become more and more intelligent and have a sense of science and technology. In the development of these technologies, the technology of intelligent car is a very good example. The hardware circuit, communication interface and control program of the controller are designed by means of analog electronic technology, digital electronic technology, SCM control principle and circuit principle. The car with automatic follow function is based on STM32 as the main core controller, equipped with the power module, motor drive module and ultrasonic module to complete the task. Using the corresponding programming language for programming (C language), each module through the hardware physical port wiring, finally achieve the expected function. Design process of automatic follow car based on STM32: automatic follow car design scheme, software design, hardware model selection, hardware platform construction and connection, in-depth understanding of the basic principles of the design, drawing and realization of circuit diagram, physical production and later finished product debugging after the completion of the corresponding design work. Finally, the completed modules were debugged, the mechanical parts were assembled, the sensors were connected to the detection components, the hardware circuit, and the system control program were debugged, finally meeting all the design and application requirements of the device.

Key words: Automatic follow; Ultrasound; STM32MCU

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