

基于 STC89C51 单片机的超声波视力保护系统的设计

摘要

在当今社会，大多数人每天都戴着一副眼镜，这是一件很平常的事情，而造成这个现状的原因就是，人们特别是小孩平时不注意保护眼睛，其中最主要的原因就是长时间的使用眼睛和不规范的写作业姿势。近视对人体有很大的危害，会影响学习、生活、工作，给人们带来麻烦，也会使眼睛产生变形，让人看起来无精打采，影响人的第一印象，严重的话，还会导致人失明。针对这些危害，人们应该对近视进行积极的预防和治疗，防止其无限制地发展。但是由于自己本身很难去纠正坐姿，注意看书时间，所以近视率一直在增加。在这样的背景下，亟需开发一种智能的视力保护仪，从各个方面帮助人们保护视力。

本文介绍了利用 STC89C51 单片机、超声波模块、显示模块、按键模块等实现了从距离与时间两方面进行控制并提醒人们来保护视力的设计。在该系统中，利用 STC89C51 的定时中断来进行读书倒计时，当读书倒计时为 0 时，会有声光提示应该进行休息，以免过度劳累；利用超声波来测量使用者与设备的距离，若低于安全距离，则蜂鸣器进行报警，提示用户注意保持用眼距离；利用 LCD 显示屏显示信息；利用按键电路去改变信息。本系统设计合理，功能可实现并且成本较低，具有使用简单、价格实惠、矫正效果佳等优点，非常符合目前大众的需求。

关键词：视力保护；STC89C51 单片机；超声波测距

Abstract

In today's society, most people wear a pair of glasses every day, which is a very common thing, and the reason for this situation is that people, especially children, do not pay attention to protect their eyes at ordinary times, among which the most important reason is the use of eyes for a long time and non-standard writing posture. Myopia has very big harm to human body, can affect study, life, work, bring trouble to people, also can make the eye produces deformation, let a person look listless, affect the person's first impression, if serious, still can bring about a person to be blind. In view of these hazards, people should actively prevent and treat myopia to prevent its unlimited development. But because oneself itself goes correcting sitting position very hard, notice to read a book time, so myopic rate is increasing all the time. In this context, it is urgent to develop an intelligent vision protection device to help people protect their vision in various aspects.

This paper introduces the use of STC89C51 microcontroller, ultrasonic module, display module, button module to achieve distance and time control and remind people to protect the design of vision. In this system, STC89C51 timing interruption is used to carry out the reading countdown, when the reading countdown is 0, there will be sound and light prompt to take a rest, so as to avoid overwork; Ultrasonic wave is used to measure the distance between the user and the device. If the distance is lower than the safe distance, the buzzer will give an alarm to remind the user to keep the eye distance. Display information using LCD display screen; Use the keypad circuit to change the information. This system design is reasonable, the function may realize and the cost is low, has the use simple, the price material benefit, the correction effect is good and so on the merit, conforms to the current public demand very much.

Key words: Eye protection; STC89C51 single-chip microcomputer; Ultrasonic ranging

目录

摘要.....	I
Abstract.....	II
目录.....	III
1 绪论.....	1
1.1 视力保护系统的设计背景及意义.....	1
1.2 国内外发展现状及发展趋势.....	2
1.3 设计概述.....	3
2 总体方案设计.....	4
2.1 视力保护系统设计实现的要求.....	4
2.2 方案的选择.....	4
2.3 系统总体方案.....	5
2.4 系统原理图.....	6
3 系统的硬件电路.....	8
3.1 控制模块的设计.....	8
3.1.1 单片机的选型.....	8
3.1.2 STC89C51 单片机简介.....	8
3.1.3 单片机最小系统.....	10
3.2 LCD1602 液晶显示的设计.....	12
3.2.1 LCD1602 液晶电路的介绍.....	12
3.2.2 LCD1602 的工作原理.....	13
3.3 DS1302 时钟电路的设计.....	15
3.3.1 DS1302 时钟电路的介绍.....	15
3.3.2 DS1302 的工作原理.....	16
3.4 HC-SR04 超声波测距原理介绍.....	18
3.5 报警电路的设计.....	19
3.6 独立按键电路的设计.....	20
4 系统软件的设计.....	22

4.1 主函数的设计	22
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