ISSN No: 2348-4845
International Journal & Magazine of Engineering, Technology, Management and Research
A Peer Reviewed Open Access International Journal

Intelligent Driver Assistant on Curved Path using Matlab

D Swathi
M.Tech,
Embedded Systems
GNIT JNT
University-Hyd.
d.swathi33@gmail.com

Dr. N.SathishKumar
Professor,
GNIT JNT
University-Hyd
nsathish528@gmail.com

Dr. M.Narendra kumar
Vice Prinicipal.
GNIT JNT
University-Hyd
Narendrskumar_maddargi@yahoo.com

Dr. S. Sreenatha Reddy
Principal
GNIT JNT
University-Hyd
Sreenath_sakkamm@yahoo.com

Abstract: This paper describes a curve negotiation "behavior" that can be used—within subsumption architectures—to produce artificial agents with the ability to negotiate curves in a humanlike way. This may be used to implement functions spanning different levels of automation, from assistance (curve warning) to automated (curve speed control). This paper gives the following:1) a summary of related works and of the subsumption architecture conceptual framework; 2) a detailed description of the function within this framework; 3) experimental data for validation and tuning derived from user tests; 4) guidelines on integration of the function within advanced driver assistance systems with different automation levels, with examples; and 5) a comparison with experimental data of the human curve speed choice models in the state of the art.

Introduction

The Embedded Technology is now in its prime and the wealth of Knowledge available is mind-blowing. Embedded System is a combination of hardware and software. Embedded technology plays a major role in integrating the various functions associated with it. This needs to tie up the various sources of the Department in a closed loop system. This proposal greatly reduces the manpower, saves time and operates efficiently without human interference. This project puts forth the first step in achieving the desired target. With the advent in technology, the existing systems are developed to have in built intelligence.

Existing system

Nowadays people are driving very fast, accidents are occurred more frequently, we loss our valuable life by making small mistake while driving. So to avoid such kind of accidents, it is necessary to alert the driver and to control the speed of vehicle automatically. The main objective of this project is to develop signaling unit to indicate the type of zone to the vehicle and to control the vehicle speed.

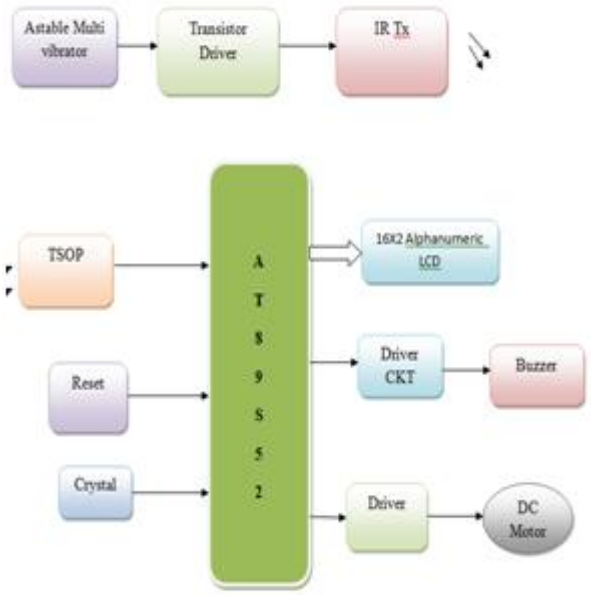
Every zone like school, highway and etc may have an IR based transmitter tag to transmit the zone information. This signal should be received by the vehicles and accordingly varies the speed limit of the vehicle. In practical, an actuator may be used to control the throttle of the vehicle. But to show the demo module here we used a DC motor, and varying the speed of it.

The project is built around AT89S52 MCU. Here we are using a pair if IR transmitter, receiver pair to track the particular school zone and automatically reduce the vehicle speeds. This information will be displayed on 16X2 LCD.

At each and every speed limiting zone it is placed with IR transmitter and vehicle consists of a receiver to track and automatically reduce the speed limit in vehicles. Once it crosses the particular area automatically it gains normal speed. We are using a DC motor for symbolic representation of vehicle.

ISSN No: 2348-4845
International Journal & Magazine of Engineering, Technology, Management and Research
A Peer Reviewed Open Access International Journal

BLOCK DIAGRAM



Draw back: The IR transmitter and TSOP receiver can be operated within shorter distance.

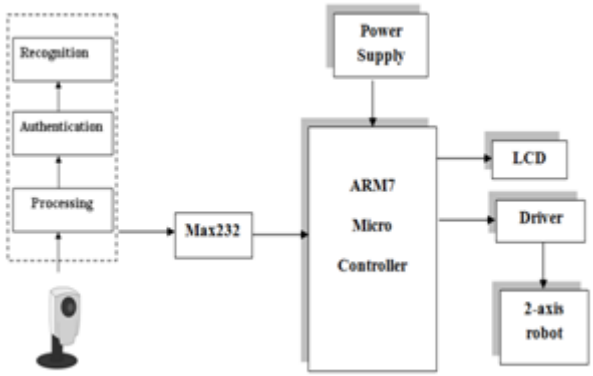
Proposed system

In proposed system, we can design a new system to monitor the normal and abnormal curve area. Depend upon the mat lab output vehicle automatically going down to slow.

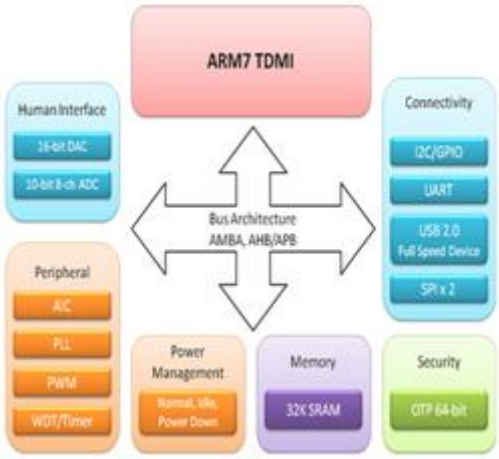
In proposed system we are using micro controller which is interface with dc motor and LCD. Here Matlab input is given to the controller. Matlab part is used to find the curve path condition. If curved path is normal condition vehicle will be going normal speed. If any abnormal happen, vehicle speed automatically going slow. Status we are monitoring on LCD.

This project uses regulated 3.3V, 500mA power supply. Unregulated 12V DC is used for relay. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac out put of secondary of 230/12V step down transformer.

BLOCK DIAGRAM



ARM7 PROCESSOR



ARM7TDMI Processor Core

The **LPC2148** are based on a 16/32 bit ARM7TDMI-S™ CPU with real-time emulation and embedded trace support, together with 128/512 kilobytes of embedded high speed flash memory.

A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at maximum clock rate. For critical code size applications, the alternative 16-bit Thumb Mode reduces code by more than 30% with minimal performance penalty. With their compact 64 pin package, low power consumption, various 32-bit timers, 4- channel 10-bit ADC, USB PORT,PWM channels and 46 GPIO lines with up to 9 external interrupt pins these microcontrollers are particularly suitable for industrial control, medical systems, access control and point-of-sale. With a wide range of serial

ISSN No: 2348-4845
International Journal & Magazine of Engineering, Technology, Management and Research
A Peer Reviewed Open Access International Journal

communications interfaces, they are also very well suited for communication gateways, protocol conver ters and embedded soft modems as well as many other general-purpose applications.

Recognition methods in image processing

Image recognition is the process of identifying and detecting an object or a feature in a digital image or video. This concept is used in many applications like systems for factory automation, toll booth monitoring, and security surveillance. Typical image recognition algorithms include:

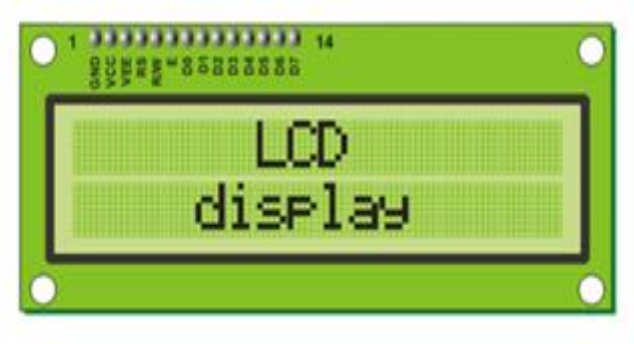
- Optical character recognition
- Pattern and gradient matching
- Face recognition
- License plate matching
- Scene change detection

LIQUID CRYSTAL DISPLAY

LCD stands for **L**iquid **C**rystal **D**isplay. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

1. The declining prices of LCDs.
2. The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.
3. Incorporation of a refreshing controller into the LCD, thereby relieving the CPU of the task of refreshing the LCD. In contrast, the LED must be refreshed by the CPU to keep displaying the data.
4. Ease of programming for characters and graphics.

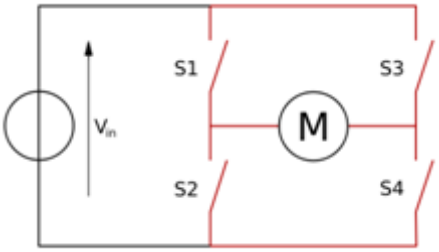
These components are “specialized” for being used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD.



DC MOTOR

An electric motor is a machine which converts electrical energy into mechanical energy.

Principles of operation

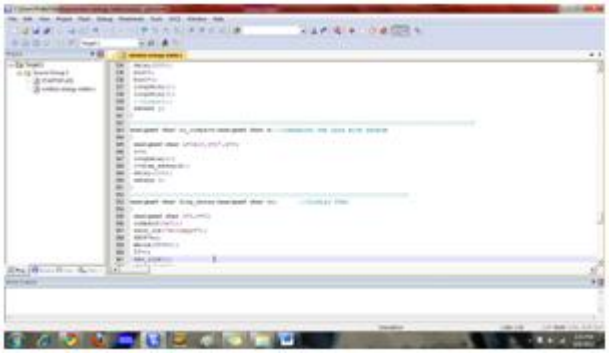


In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.

Software tools

Keil compiler is a software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. Keil compiler also supports C language code.

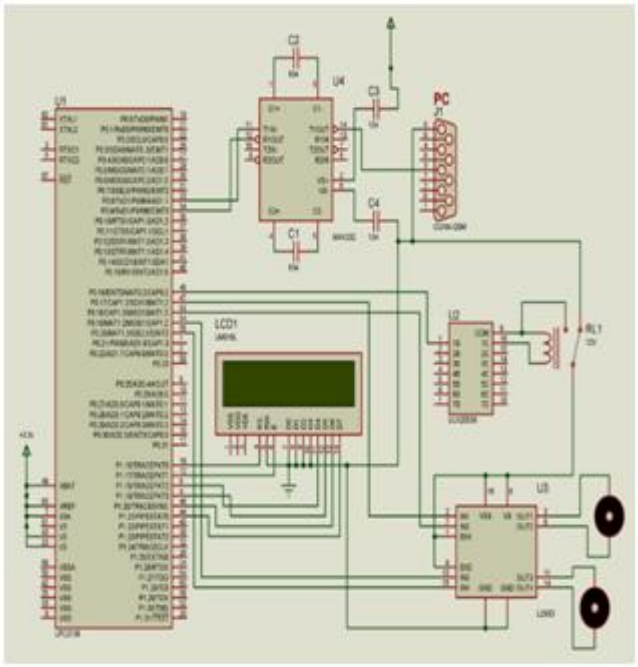
ISSN No: 2348-4845
International Journal & Magazine of Engineering, Technology, Management and Research
A Peer Reviewed Open Access International Journal



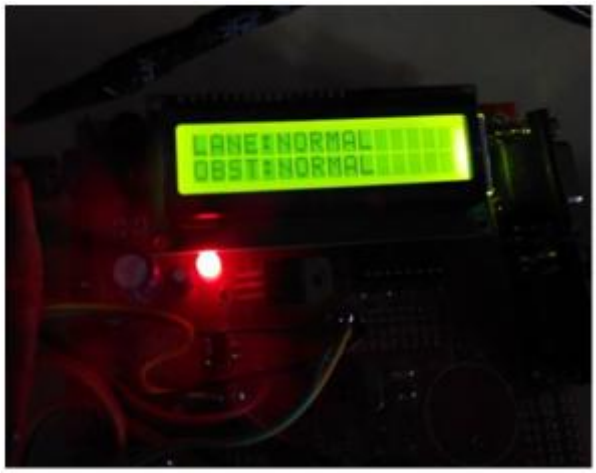
Flash Magic

Flash Magic is a tool which is used to program hex code in EEPROM of micro-controller. It is a freeware tool. It only supports the micro-controller of Philips and NXP. It can burn a hex code into that controller which supports ISP (in system programming) feature. Flash magic supports several chips like **ARM Cortex M0, M3, M4, ARM7 and 8051.**

Schematic diagram



Results



Advantages

- Human intervention is less Fast response
- Loss of life can be avoided

Applications

- Vehicles
- Transportation systems

Conclusion

Hence we designed a project " Driver assistance system on curved roads using matlab" in which the security is provided to the driver and status of the system can be displayed on LCD. The curved path is processed using matlab software which is interfaced to the camera for curved path image detection. Through this project automatically vehicle speed is reduced so that we can save the life of person.

References

[1] A. Deraemaeker, "Vibration based structural health monitoring using

large sensor arrays: Overview of instrumentation and feature extraction
based on modal filters," in New Trends in Vibration Based Structural
Health Monitoring, A. Deraemaeker and K. Worden, Eds. New York,
NY, USA: Springer, 2010, pp. 19–32.

[2] W. Fan and P. Qiao, "Vibration-based damage identification methods:
A review and comparative study," Struct. Health Monitor., vol. 10, no. 1,
pp. 83–111, Jan. 2011.

[3] PCB Group, Inc. (2015). Accelerometers—Sensors for Shock, Vibration and Acceleration. [Online]. Available: http://www.pcb.com/
TestMeasurement/Accelerometers, accessed Oct. 9, 2015.

[4] Honeywell. (2015). Honeywell Test and Measurement Sensors.[Online]. Available: https://measurementsensors.honeywell.com,
accessed Oct. 9, 2015.

[5] National Instruments. (2015). Data Acquisition (DAQ)—National
Instruments. [Online]. Available: http://www.ni.com/data-acquisition,
accessed Oct. 9, 2015.

[6] MEMSIC Inc. (2015). Wireless Sensor Networks. [Online]. Available: http://www.memsic.com/wireless-sensor-networks, accessed
Oct. 9, 2015.

[7] S. Jang et al., "Structural health monitoring of a cable-stayed bridge
using smart sensor technology: Deployment and evaluation," Smart Struct. Syst., vol. 6, nos. 5–6, pp. 439–459, Mar. 2010.

[8] LORD MicroStrain. (2015). Wireless Nodes. [Online]. Available:
microstrain.com/wireless/sensors, accessed Oct. 9, 2015.

[9] M. Jayawardhana, X. Zhu, R. Liyanapathirana, and U. Gunawardana,
"An experimental study for decentralized damage detection of
beam structures using wireless sensor networks," J. Struct. Monitor.
Maintenance, vol. 2, no. 3, pp. 237–252, 2015.

[10] R. Bhattacharyya, C. Floerkemeier, and S. Sarma, "Towards tag antenna
based sensing—An RFID displacement sensor," in Proc. IEEE Int. Conf.
RFID, Apr. 2009, pp. 95–102.