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USER AUTHENTICATION AND VEHICLE CONTROL USING ARM CONTROLLER

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Abstract

Nowadays there are many risks while hiring the call taxies. This project is to solve those conflicts. Many of the problems are because of drivers of taxies. In this project without drivers the customers can access the vehicle. For this there must be so many challenges needed to be answered regarding authentication, driving license, security keys, automatic door lock of car etc. So this project helps for [3]authentication of user, verifying driving license, automatic door lock control. The customer must wear the seat belt to start the ignition. When the customer wants to leave the car, he should pay using his smart card according to his billing. If the customer damages the car then he should pay according to the damages made.

Keyword: Advance RISC Machine(ARM), UART(Universal Asynchronous Receiver Transmitter, Global Positioning System(GPS), Global System for Mobile communication(GSM).

1. INTRODUCTION

Embedded System is used in various applications. The applications include variety of aspects such as security, robotics, industries etc. In this paper, the security and authentication are discussed. There are many risks while hiring the call taxies. This project is to solve those conflicts. Many of the problems are because of drivers of taxies like smuggling, robbery, abusing women etc. In this project without drivers the customers can access the vehicle. For this he/she must be authorized and have driving license. Customer can drive this car where ever he wants. They should pay according to the distance they drive. And they should be monitored by the control room. The customer must wear the seat belt to start the ignition. When the customer wants to leave the car, he should pay using his smart card according to his billing. If the customer damages the car then he should pay according to the damages made.

2. PROPOSED AUTHENTICATION METHOD

In this section we give an overview of basic WLD descriptor and its extension. This descriptor represents an image as a histogram of differential excitations and gradient orientations, and has several interesting properties like robustness to noise and illumination changes, elegant detection of edges and powerful image representation.

WLD descriptor is based on Weber's Law. According to this law the ratio of the increment threshold to the background intensity is constant. Inspired by this law, Chenetalproposed WLD descriptor for texture representation. The computation of WLD descriptor involves three steps i.e. finding differential excitations, gradient orientations and building the histogram.

Weber's Law

Ernst Weber, an experimental psychologist in the 19th century, observed that the ratio of the increment threshold to the background intensity is a constant. This relationship, known since as Weber's Law, can be expressed as:

$$\frac{\Delta I}{I} = k,$$

Where ΔI represents the increment threshold (just noticeable difference for discrimination); I represents the initial stimulus intensity and k signifies that the proportion on the left side of the equation remains constant despite variations in the Iterm. The fraction ΔI/I is known as the Weber fraction. Weber's Law, more simply stated, says that the size of a just noticeable difference (i.e., ΔI) is a constant proportion of the original stimulus value.

WLD

In this part, we describe the [1]two components of WLD: differential excitation (ξ) and orientation (θ). After that we present how to compute a WLD histogram for an input image (or image region).

Gradient Orientation

Next main component of WLD is gradient orientation. For a pixel the gradient orientation is calculated as follows:

$$\theta(x_c) = \arctan\left[\frac{I_{73}}{I_{51}}\right]$$

Where is the intensity difference of two pixels on the left and right of the current pixel *xc*, and is the intensity difference of two pixels directly below and above the current pixel,

$$\theta \in [-\frac{\pi}{2}, \frac{\pi}{2}].$$

Differential Excitation

We use the intensity differences between its neighbours and a current pixel as the changes of the current pixel. By this means, we hope to find the salient variations within an image to simulate the pattern perception of human beings. Specifically, a differential excitation ξ(xc) of a current pixel xc is computed as illustrated in Fig. 1. We first calculate the differences between its neighbors and the center point using the filter f00:

$$v_s^{00} = \sum_{i=0}^{p-1}(\Delta x_i) = \sum_{i=0}^{p-1}(x_i - x_c),$$

Where xi (i=0,1,…p-1) denotes the i-thneighbors of xc and p is the number of neighbors. Following hints in Weber's Law, we then compute the ratio of the differences to the intensity of the current point by combining the outputs of the two filters f00 and f01 (whose output 01 s v is the original image in fact):

$$G_{ratio}(x_c) = {}^{v_s^{00}}\!/_{v_s^{01}}.$$

We then employ the arctangent function on Gratio(•):

$$G_{arctan}\left[G_{ratio}\left(x_c\right)\right]=\arctan\left[G_{ratio}\left(x_c\right)\right].$$

Combining (2), (3) and (4), we have:

$$G_{arctan}\left[G_{ratio}\left(x_c\right)\right]=\gamma_s^0=\arctan\left[\frac{v_s^{00}}{v_s^{01}}\right]=\arctan\left[\sum_{i=0}^{p-1}\left(\frac{x_i-x_c}{x_c}\right)\right]$$

So, the differential excitation of the current pixel ξ(xc) is computed as:

$$\xi\left(x_c\right)=\arctan\left[\frac{v_s^{00}}{v_s^{01}}\right]=\arctan\left[\sum_{i=0}^{p-1}\left(\frac{x_i-x_c}{x_c}\right)\right].$$

Note that ξ(x) may take a minus value if the neighbour intensities are smaller than that of the current pixel. By this means, we attempt to preserve more discriminating information in comparison to using the absolute value of ξ(x). Intuitively, if ξ(x) is positive, it simulates the case that the surroundings are lighter than the current pixel. In contrast, if ξ(x) is negative, it simulates the case that the surroundings are darker than the current pixel.

Gabor Filter Approach

[2] The low frequency subbands of two source images are fused based on selection of appropriate coefficients using gabor filtering. It is useful to discriminate and characterize the texture of an image through frequency and orientation representation. It uses the gaussian kernel function modulated by sinusoidal wave to evaluate the filter coefficients for convolving with an image.

The complex Gabor in space domain, here is the formula of a complex Gabor function in space domain

g(x, y) = s(x, y) wr(x, y)

where s(x; y) is a complex sinusoidal, known as the carrier, and wr(x; y) is a 2D
Gaussian-shaped function, known as the envelop.

The complex sinusoidal is denotes as follows,

s(x, y) = exp (j (2*pi(u0 x + v0 y) + P))

where (u0, v0) and P denotes the spatial frequency and the phase of the sinusoidal respectively.

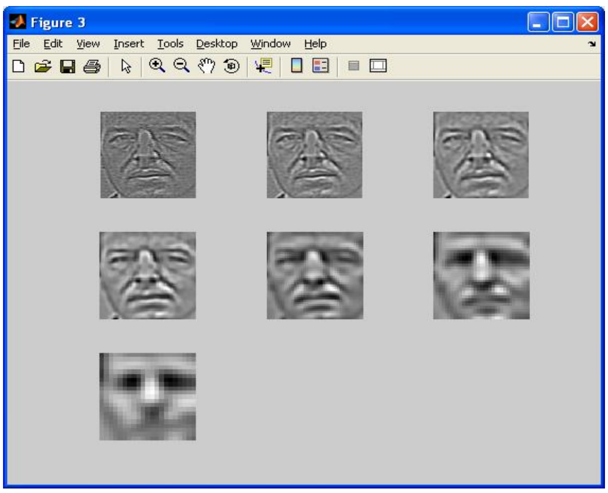


Fig 1: Gabor Face

3 BLOCK DIAGRAM

3.1 Block Diagram for Authentication

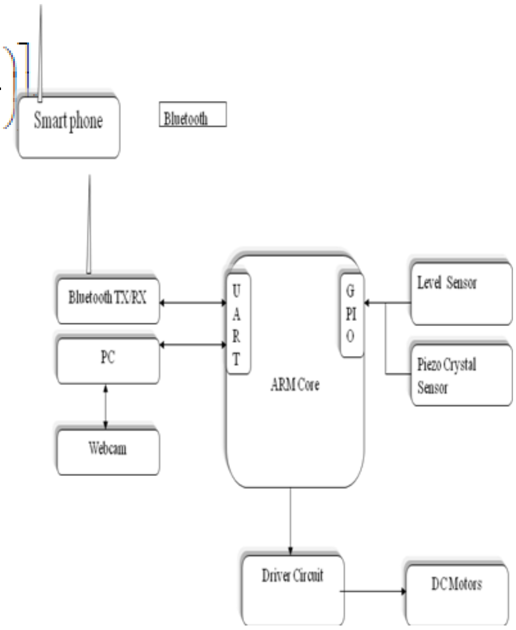


Fig 2: block diagram for authentication

3.2 Block diagram monitoring the vehicle

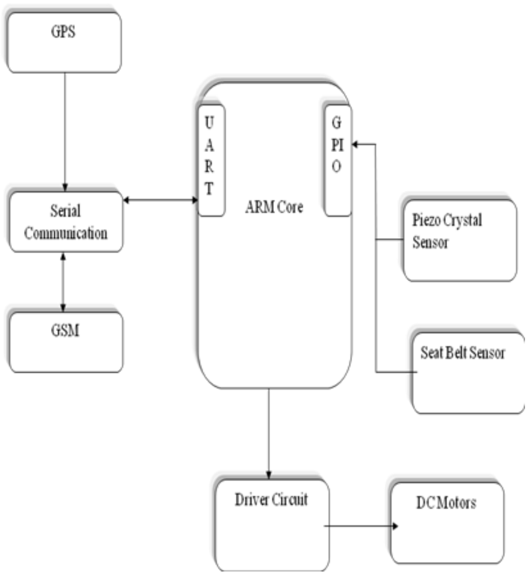
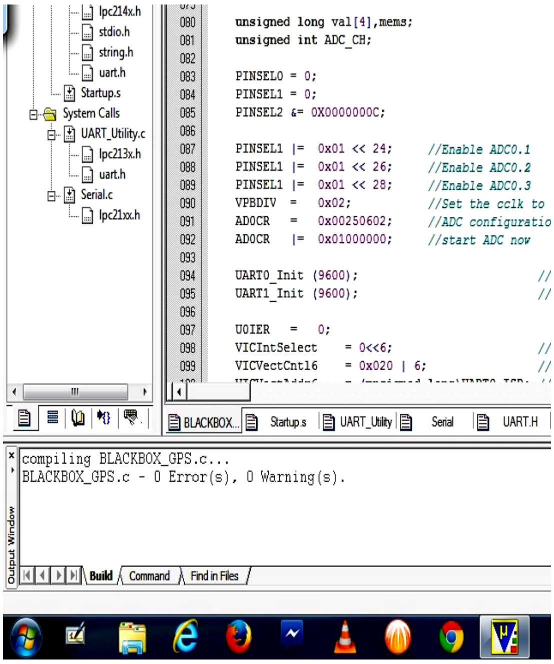


Fig 3: block diagram for monitoring the vehicle

4 COMPILATION OUTPUT



5 CONCLUSION

The vehicle can be taken without driver, and customer can drive this car where ever he wants. They should pay according to the distance they drive. And they should be monitored by the control room. This project helps to avoid thefts, smuggling and provide protection to women passengers.

REFERENCE

[1] Al-Amin Bhuiyan, and Chang Hong LiuON FACE RECOGNITION USING GABOR FILTERS World Academy of Science, Engineering and Technology

International Journal of Computer, Information, Systems and Control Engineering Vol:1 No:4, 2007

[2] Tudor BARBUGABOR FILTER-BASED FACE RECOGNITION TECHNIQUEPROCEEDINGS OF THE ROMANIAN ACADEMY, Series A, Volume 11, Number 3/2010, pp. 277–283

[3] C. Nandakumar, G. Muralidaran and N. TharaniREAL TIME VEHICLE SECURITY SYSTEM THROUGH

FACE RECOGNITIONInternational Review of Applied Engineering Research.

ISSN 2248-9967 Volume 4, Number 4 (2014), pp. 371-378