

Automatic Gadget Charger using Matlab and Solar Panel

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Abstract-

Mobile phones have become a major source of business/personal communication. The mobile phone business is currently worth billions of dollars, and supports millions of phones. The need to provide a public charging services is essential.

Now a days student and many others peoples use the public transportation ,people who are making very long journey in order to attend business workshop, conferences or for any private purpose don't know that their battery level at 0% and they often forget their charger at home or in hotel rooms. In rural area s there is no continuous power supply about 12-13 hours. Many times battery become flat in the middle of conversations particularly at inconvenient times to access to standard charger isn't possible. Many critics argued that long distance travelling vehicles provides power points. Even though one or two power points are provided at a particular place in the vehicle it is not all sufficient for all the users, therefore need to provide a public charging service is essential and coin-based mobile battery charger are designed with help of solar panel to solve such problems.

Keywords - Image processing, Microprocessor, Solar panel, coin etc

I. INTRODUCTION

The main aim of the paper is to build a coin based mobile charger which provides a unique service to both urban/rural public where grid power is not available for partial/fulltime and source of revenue for site providers for establishment. the coin-based mobile battery charger can be quickly and easily installed outside any business premises and solar energy is one of the abundant source of energy which is freely available in the nature in this paper solar panel system is mainly used to harness that energy in order to use it as power supply for charging the mobile. in the event of unpredictable grid power and availability of abundant solar power. A coin based universal mobile battery charger is designed and developed in this paper. this device is like a vending machine for battery charging at kiosks and the user has to plug the phone into one of the adapters and insert a coin for charging at a constant current for a definite duration. the solar power application to mobile battery charging has been studied in the past. solar chargers convert light energy into dc current for a range of voltage that can be used for charging the

battery. they are generally portable but can also be mounted. in this design of coin based mobile charger a fixed solar panel of size 635x550x38mm , 37wp is used to charge the battery up to maximum 2.0 amp in bright sun light. in this paper, the design and progress of a coin based universal mobile battery charger based on main power and solar power is discussed and this is primarily for a grestic areas where the mobiles are basic needs for communication and the main power is not available all the time. the motivation for this research came from the published papers [1to 3].

II. PROPOSED SYSTEM BLOCK DIAGRAM

The mobile battery charger starts charging a mobile connected to it when a coin is inserted at the coin insertion slot at the input stage. The type of coin and the size will be displayed on LCD display for the user so as to ensure correct coin insertion. Any other coin, if inserted in the slot will be returned to refund box. A webcam camera attached to the coin insertion slot accepts the coin into the battery charging unit and start charging the mobile battery for a specific period controlled by the software of the microcontroller.

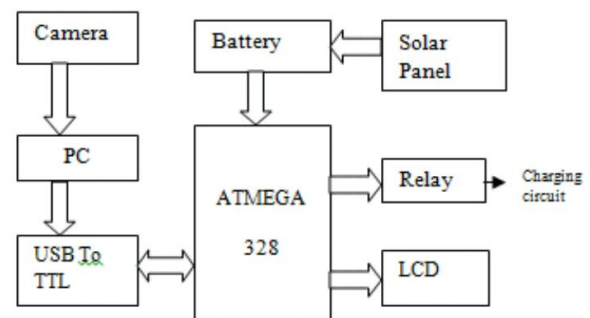


Fig 2.1 Block Diagram

Image processor in our project is a personal computer and image analysis tool is MatLab. So all the features and flow are been incorporated on PC with help of MatLab by using various algorithms. We are also using PC screen as output display as to minimise to hardware complexity at the booth and to save data. Thus an laptop architecture is used where webcam on top of screen is used for project demonstration.

III.MATLAB SIMULATION RESULTS

Coin detection place a vital important role in this project for that the MATLAB's tool of Image Processing is used, where the image of coin is taken as input to the image detection where to check genuinity of coin whether coin is real or fake. we take two sample original coin for its detection fig 3.1.



Fig. 3.1 Coin Detection

Following result shows the MATLAB output for coin detection. Here figure 3.1 shows the input image which consist of 'get live', 'Read Image', 'process' parameters. Get live mean we take the image of coin live. Then it reads the image, and lastly process the image means it compares the image with originally stored image and gives the output. Fig.3.1 an original coin image taken by the camera then figure Fig.3.2 and Fig.3.3 shows the MATLAB simulation of original image it gives the result "As Fake to Indicate Image of coin is not genuine".

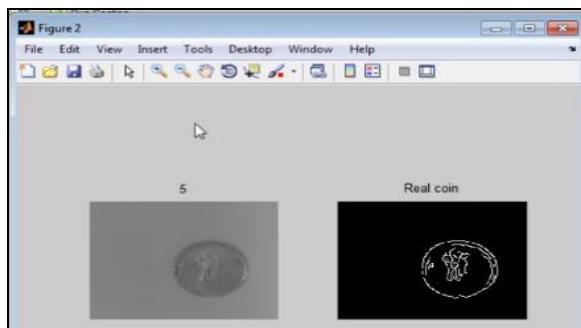


Fig.3.2

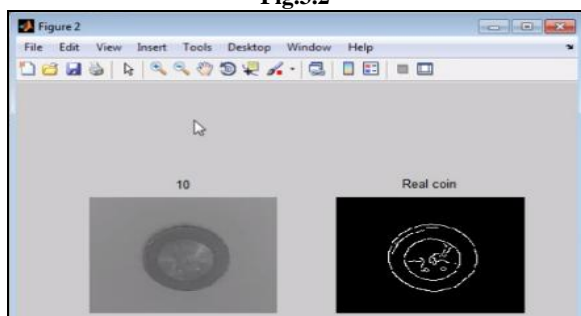


Fig.3.3

We got the 24-bit RGB coin image. Image processing of colour images can takes more time than the gray scale images. So, convert the 24-bit RGB image into the 8-bit Greyscale image. From the second step, we get gray scale image of the coin.

Now, I am going to convert this gray scale image to binary image in MATLAB for next process. By this binary image, we can easily calculate the area and centroid of each and every coin. This shown in fig 3. After converting binary image, we have some dotted parts in this image as noise. After using imfill command, we have cleared image. So by this we got noise free coin image, so we have compare for noise free image with an original image through calculating the area and centroid. Now, we use regionprops command for finding Area and centroid of simple coin of given image from the MATLAB. By this step, we get Area and centroid of coin main image. Using this, I am going to identifying the coin is fake or real.

Canny edge detection is a technique to extract useful structural information from different vision objects and dramatically reduce the amount of data to be processed. It has been widely applied in various computer vision systems. Canny has found that the requirements for the application of edge detection on diverse vision systems are relatively similar. Thus, an edge detection solution to address these requirements can be implemented in a wide range of situations. The general criteria for edge detection includes:

- 1.Detection of edge with low error rate, which means that the detection should accurately catch as many edges shown in the image as possible
- 2.The edge point detected from the operator should accurately localize on the center of the edge.
- 3.A given edge in the image should only be marked once, and where possible, image noise should not create false edges.

A correlation coefficient is a number that quantifies a type of correlation and dependence, meaning statistical relationships between two or more values in fundamental statistics.

Types of correlation coefficients include:

Pearson product-moment correlation coefficient, also known as r , R , or Pearson's r , a measure of the strength and direction of the linear relationship between two variables that is defined as the (sample) covariance of the variables divided by the product of their (sample) standard deviations.

Intra class correlation, a descriptive statistic that can be used when quantitative measurements are made on units that are organized into groups; describes how strongly units in the same group resemble each other. Rank correlation, the study of relationships between rankings of different variables or different rankings of the same variable Spearman's rank correlation coefficient, a measure of how well the relationship between two variables can be described by a monotonic function Kendall tau rank correlation coefficient, a measure of the portion of ranks that match between two data sets.

Goodman and Kruskal's gamma, a measure of the strength of association of the cross tabulated data when both variables are measured at the ordinal level.

Syntax:

`r = corr2(A,B)`

`r = corr2(gpuarrayA,gpuarrayB)`

Description:

`r = corr2(A,B)` returns the correlation coefficient `r` between `A` and `B`, where `A` and `B` are matrices or vectors of the same size. `r` is a scalar double.

`r = corr2(gpuarrayA,gpuarrayB)` performs the operation on a GPU. The input images are 2-D `gpuArrays` of the same size. `r` is a scalar double `gpuArray`. This syntax requires the Parallel Computing Toolbox™.

IV. OUTPUT RESULTS

COIN (RS.)	CHARGING TIME(MIN)	CHARGING PERCENTAGE(%)
5	2MIN	5- 6%
10	5MIN	10– 15%

Applications:

- Solar Systems
- Power Management systems
- Industrial applications
- The coin based mobile phone charger is very useful to public for using coin to charge for the mobile phone in any places

V. CONCLUSION

A system of charging mobile batteries of different manufacturers using solar power has been designed for rural and remote areas where the grid power is not available all the time. The mobile communication has become a necessary in rural areas and this device is useful for charging mobile batteries

as these mobile battery chargers can be installed in kiosks at various places for the convenience of mobile users.

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