

Low Cost DSLR

Sarvesh Naik
BE Student

*Department of Electronics and Telecommunication
Engineering
Don Bosco College of Engineering Fatorda Goa*

Brijkishor D Singh
BE Student

*Department of Electronics and Telecommunication
Engineering
Don Bosco College of Engineering Fatorda Goa*

Gagan Sawant
BE Student

*Department of Electronics and Telecommunication
Engineering
Don Bosco College of Engineering Fatorda Goa*

Prof. Trima Piedade Fernandes e Fizardo
Assistant Professor

*Department of Electronics and Telecommunication
Engineering
Don Bosco College of Engineering Fatorda Goa*

Balan J Murugan
BE Student

*Department of Electronics and Telecommunication Engineering
Don Bosco College of Engineering Fatorda Goa*

Abstract

In this paradigm model, we have a tendency to be attempting to realize the image properties of DSLR image i.e. high-resolution image size, background blur, image sharpening, and Histogram equalization, in a very appropriate low value. Our paradigm model deals with above of these four properties.

Keywords: Arduino, Raspberry Pi, Resolution, Enhancement, Histogram Equalization

I. INTRODUCTION

In today's world, the quantity of photography has exaggerated. Many kids unit involved in photography, but as a result of the high cost of DSLR, no person can afford it. So therefore on the beat, this drawback, we've to come up with the idea to create associate occasional worth high-resolution camera. A digital single lens camera may well be a camera that mixes the optics and thus the mechanism of 1 lens camera with a digital imaging device. This project deals with creating associate occasional worth DSLR camera, using one camera module. Ordinarily, the cost of DSLR camera is roughly beyond 35k. However, with this project, we'll turn out a camera that cost around 15k that produces the roughly same quality of Image as in DSLR. The technique that is used is image super-resolution exploitation image method. It's technique of obtaining one high-resolution photo from one or further low-resolution photos.

II. LITERATURE SURVEY

A digital single-lens camera (also observed as a digital SLR or DSLR) may well be a camera that mixes the optics and thus the mechanisms of a single-lens camera with a digital imaging device, as hostile photographic paper. The reflex vogue theme is that the first distinction between a DSLR and completely different digital cameras. Inside the reflex vogue, light-weight travels through the lens, then to a mirror that alternates to send the image to either the viewfinder or the imaging device.

[1]The traditional completely different would be to possess a viewfinder with its own lens, so the term "single lens" for this vogue Literature survey: Cameras nowadays Today's picture cameras can't solely capture photos however conjointly shoot HD video, offer picture and video redaction, and record information as destination captured by GPS etc. Camera produces area unit perpetually developing with higher cameras and newer practicality, a number of that area unit mentioned within the remainder of this section. Projector in private as a replacement practicality, Nikon has enforced a projector in their camera COOLPIX S1000pj. It will clearly project images directly from the camera and onto a white wall from 5 to forty inches in diameter. 3D picture because the 1st camera giving 3D photography that doesn't need special glasses, Fuji film gift the FinePix REAL 3D W1 camera. The camera features a designed 3D show and extra frames for the images can be purchased. Photos have smitten this camera also can be written on special paper by the corporate. Face Recognition Face recognition package, like in Apple's iPhoto, is being developed by many firms and establishments. To acknowledge a person's face and tell it aside from different faces could be a difficult task. Hafed and Levine reason however ones face can have several variations, while the variations between completely different faces could be rather little.[1] They conjointly state that we have a tendency to have however to examine face recognition package that works absolutely. To acknowledge associate object as being a face is a smaller amount problematic. Kodak recently introduced a camera, Kodak Easy Share Z915 that acknowledges its motive, that be a face, nature etc., and adjusts its camera settings supported

this data. Nikon's COOLPIX S1000pj also can acknowledge faces and features a operate referred to as Skin Softening that analyse skin tones and change them within the image Screens and Buttons Canon Greek deity 7D, 'made to be the tool of alternative for serious photographers and semi-professionals', has many new and interesting options. A clear alphanumeric display screen is showed within the viewfinder, on which help is provided. As an example, can a gyro meter indicate the position of the camera and user-defined car Focus (AF) points will provide a larger management and degree of fineness and sensitiveness. Most of the camera's buttons is user outlined, so favourite practicality is going to be simply accessible.

A. Future Cameras

Kroeker philosophizes over future cameras and counsel that consecutive major step in photography could be on however pictures area unit captured and processed, while he also points out that usability could be a major challenge during this work. Kroeker mentions Levoy, who, among different things, works on a project on focalization photos when they are taken. This will be dynamical the main target in a very picture from one object to another or just repair the associate out-of-focus image. Though the instant Camera picture handicraft area unit mentioned as future cameras the complete ideas area unit still not enforced in any industrial camera and area unit, therefore, mentioned here.

1)The Instant Camera

Microsoft researchers, Choen and Szeliski, gift a development they decision The Moment Camera. They imply that in 100 % of people's awake time, our eyes area unit closed attributable to blinking. So the camera typically captures the photographed with closed or half-closed eyes. The most plans of Choen and Szeliski's camera is to capture an image over time that the camera will opt for an area of that time once no eyes area unit closed. This will be an excellent remedy once photographing groups. Completely different shots are emerged into one image to induce a bunch picture wherever no eyes area unit closed. Cameras also can notice once somebody is smiling and selected that moment to stay. The camera can gather additional information than required for a picture, and automated and user-assisted algorithms can offer the simplest image from this data. Choen and Szeliski argue that capturing an image of an acquaintance whereas blinking does not capture the instant since this can be not; however, the person is understood in the real world. Camera producers have already created practicality supported identical problem to unravel[3]. This camera also can acknowledge smiles. Choen and Szeliski's Moment Camera will capture each bright and dark area within one image. Though they'd like this practicality to be somewhat unremarkable to the user, the system, on the opposite hand, are going to be rather completely different from an everyday one. It contains 3 steps:

- 1) Finding options within the pictures and matching them.
- 2) Find the simplest image to settle on.
- 3) Modify pal worth based mostly on the remainder of the image so as to induce a swish and properly exposed picture.

During data recording, the camera changes exposure settings and focus points so as to take completely different photos that may be worked into one sensible one. Current digital cameras suffer from the restricted dynamic range: they can't image each terribly bright areas and dark areas within the same exposure. These can amendment with the instant camera, wherever 2 exposures will merge into one image, and acquire an ideal exposure of each bright and also the dark areas³. Lischinski et al. Gift a tool that, with user input, will concern identical thing: it regionally adjusts tonal values in a picture. Nayar, at university, describes a technique that, with just one captured image, will grasp additional ranges in a picture. He argues that digital cameras' usual measure of 256 levels of brightness is not enough to capture the variations in brightness found in several typical scenes[3]. The Moment Camera also can capture dynamics with its many exposures. As an example, will a child swinging across a group of monkey bars be captured at completely different places through time and several other exposures are printed to 1 picture Photo handicraft could be a technique aiming at creating one image out of many, somewhat overlapping, pictures of various elements of a read. The image to become will, for instance, be a panorama or a photograph of high resolution. Brown and Lowe present a system for merging many captures into one image. They use object recognition techniques to pick out matching pictures. The matching spots in several images area unit placed over one another for the panorama image to become complete. This will mechanically happen while not user input. The system is powered by camera zoom, illumination etc. Baudisch at Microsoft analysis exhibit a system, however, imply that their picture handicraft system is going to be enforced in the camera. The advantage of implementing the system within the camera is that the lensman will quickly see what elements of the image area unit missing, and take new photos at once, while not having to return back to the screen.

2)ASCII text files Camera

People at the Stanford camera work Laboratory and also the Nokia analysis Centre Palo Alto Laboratory area unit developing associate ASCII text file idea of a camera .The camera accommodates DSLR lenses associated sensors and uses embedded UNIX system software. It will connect to the web, and also the camera In our project we have a tendency to area unit essentially attempting to click the image and method it into a decent quality image, the standard of the image turn out can virtually adequate DSLR quality. We will method that image with the assistance of MATLAB program.

III. SYSTEM DESIGN

A. Block Diagram:



Fig. 1: Block Diagram

B. Flowchart:

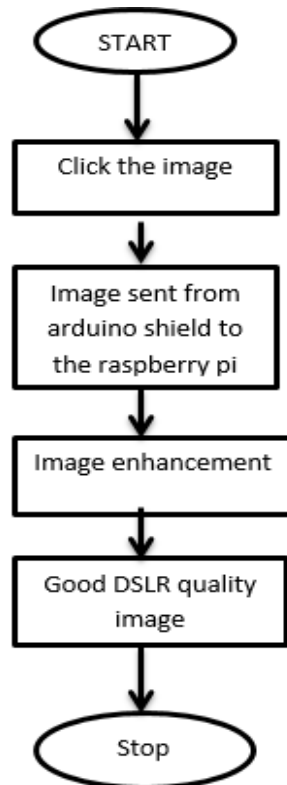


Fig. 2: flowchart

C. Algorithm:

- 1) START
- 2) Camera module detects the image and captures it.
- 3) Arduino is connected to Arduino protect.
- 4) Program for capturing image is written within Arduino
- 5) The image is then sent to the raspberry pi, as Arduino is connected to raspberry pi serially.
- 6) Program for increasing quality of an image is placed within raspberry pi.
- 7) Once the image reaches raspberry pi program is run and you get the sensible quality image.
- 8) Finally, this image is displayed at the raspberry pi screen

IV. WORKING

The construct of operational of low-value DSLR is that the camera captures a high-resolution image with a foul quality. The quality of this image is commonly improved with the help of image improvement technique. One of the foremost properties of a regular DSLR is that it clicks the icon in portrait mode. This property is commonly achieved in our project exploitation MATLAB, exploitation face detection.

Types of programs within raspberry pi:

A. [4]Sharpened image

Algorithm for image sharpening

- 1) Laplacian scaling
- 2) Non-scaling
- 3) Sharpening

Implementing this rule in MATLAB we have a tendency to get sensible quality and sharpened image of the input image.

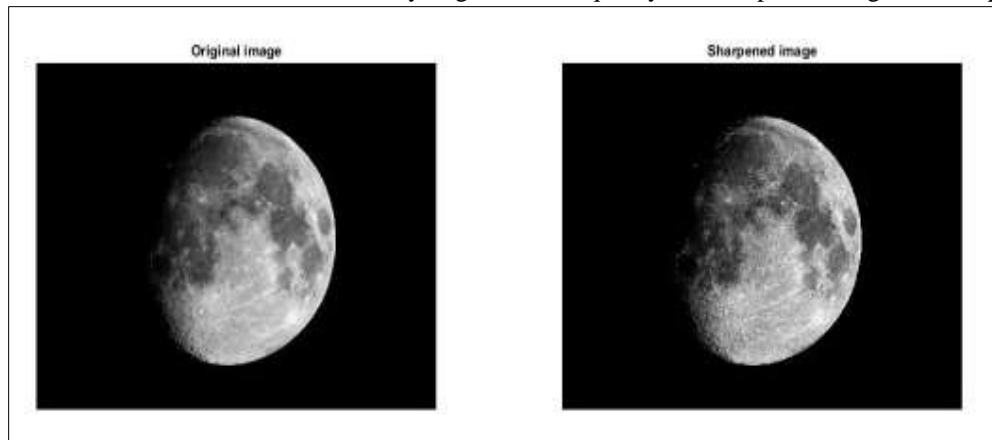


Fig. 3: sharpened Image

B. [4]Histogram Equalization

- 1) Build the likelihood density operate and also the accumulative density operate on the image.
- 2) Investigating the number of pixels of ever colourise the image and manufacturing a running total of the count.
- 3) Then by merely scaling the output, we will perform bar chart deed



Fig. 4: Image after Histogram Equalization

C. Super-resolution

It uses Non-uniform Interpolation. This approach consists of 3 stages i.e. i) registration, ii) non-uniform interpolation and iii) de-blurring heterogeneous interpolation SR reconstruction results by (a)nearest neighbour interpolation, (b)additive interpolation, (c)heterogeneous interpolation exploitation four LR pictures, and (d) de blurring half (c)With registration of input pictures, a composite image on non-uniformly spaced sampling points is obtained. In the second step, uniformly spaced sampling area unit is obtained by direct or unvarying reconstruction procedure. When obtaining a high-resolution image with heterogeneous interpolation, restoration is administrated to get rid of blur.[2]

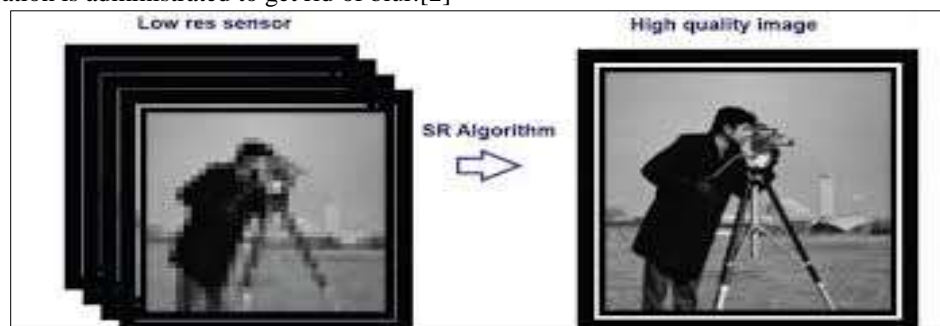


Fig. 5: Super Resolution Image

V. FUTURE SCOPE

The value of our project area unit typically any reduce by eliminating Arduino Uno, Arduino defend, and Arduino camera module and commutation that by the raspberry pi camera module. In order to want smart footage in low light-weight torch area unit is typically used. The area unit is typically utilized in situation of CCTV camera to capture high-quality photos. Also, you may improve face recognition repeatedly beyond some worth camera.

VI. CONCLUSION

The target of low-value DSLR is to minimize the cost. The low-value DSLR still encompasses a number of shortcomings, however, achieves most of the objectives, like image sharpening, super-resolution and histogram equalization. Jointly had a peek scrutinize all straight forward sensible program of the MATLAB. So briefly, low cost DSLR desires a well light condition to capture the image.

REFERENCES

- [1] Raimondo Schettini and Silvia Corchs, "Underwater Image Processing: State of the Art of Restoration and Image Enhancement Methods", Hindawi Publishing Corporation EURASIP Journal on Advances in Signal Processing Volume 2010.
- [2] Nan Zhao; Cuihua Li; Hua Shi; Chen Lin, "Multi-Frame Image Super-Resolution Based on Regularization Scheme," Control, Automation and Systems Engineering (CASE), 2011 International Conference on , vol., no., pp.1,4, 30-31 July 2011
- [3] Defeng Zhang, Digital Image Processing Using MATLAB. Beijing: Posts and Telecom Press, 2009, 10
- [4] Rafael C.Gonzalez, Richhard E. Woods.Digital Image Processig Second Edition, Publishing House of Electronics Industry.2007.8 [10] Jie Lin,Mengyin Fu, Daoping Li, Self-adaptive Wavelet Threshold De-noising Method and Its Application in Image Processing . ACTA ARMAMENTARII, 32:896-900,2011