Implementation of Robust Barcode Modulation Mechanism for Large Data Trans Reception Using Android Device

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Abstract:

Barcoding, since its evolution has emerged as a very secure and quick way to identify the data or things uniquely, but the other major use of the bar-coding is to secure the data using barcodes. The concept of 2-D barcodes is of great relevance for use in wireless data transmission between handheld electronic devices. In a general setup of barcode standalone systems, any file on a cell phone, for example, can be transferred to a second cell phone through a series of images on the LCD which are then captured and decoded through the barcode scanner of the second cell phone. In the proposed system, a new approach for data modulation in high capacity 2-D barcodes is introduced, where in the High capacity 2 D barcode of 448*63 pixels is used to barcode the data and thereby transmitted through any wireless or wired medium. The proposed barcode has a high capacity of encoding the large amount of data by making use of MD5 secure hashing algorithm for uniquely identifying the data. The data is hashed using MD5 algorithm and thereby retrieved by cross hashing the values decoded from the barcode. The proposed bar-coding and barcode modulation technique makes use of the latest technology for generating and reading the barcodes and thereby avail users to securely transmit the data. In this paper we have propose the survey of barcode types and compare this with high capacity 2D barcode.

Keywords: HC2D, High Capacity, 2 D barcode.

1. INTRODUCTION

In today's business environment, staying competitive is critical to your success. Barcode data-collection technology is an effective way to improve the bottom line and meet the competitive challenges your organization faces every day Combined with data-collection technology, bar codes provide a rapid, accurate, and efficient means to collect, process, transmit, record, and manage data in a variety of Industries. Retail, package delivery, warehousing and distribution, manufacturing, healthcare, and point-of-service applications can all benefit from the use of bar codes. Bar code is a fundamentally simple technology. But like the chain - or the wheel - simplicity of concept relies heavily on excellence of total execution. Data ID takes full responsibility to the chain primitively barcodes represented data by varying the widths and spacing of parallel lines, and may be referred to as linear or one dimensional. Later they evolved into rectangles, dots, hexagons and other geometric patterns in two dimensions. The HC2D barcode is a highest capacity of 2D barcode while it occupies a small area. The size of the HC2Dbarcode is suitable for displaying on print media such as paper and poster. But, for reading the HC2D barcode, the bit representation of the barcode is obtained by scanning the image of the barcode with scanner machine only.

2. LITERATURE SURVEY

A paper created by Kongqiao Wang, Yanming Zou And Hao Wang on 1D bar code reading on camera phones In this paper, using a NOKIA 7650, VGA camera phone on the bar code reading algorithms we present the research effort. From poor-quality images to extract bar code characters knowledge- based bar code segmentation and a wavelet-based bar code region location scheme is applied 1] For the recognition engine there are input all the characters which are segmented barcode, and the bar code character string as the final recognition result with the smallest total distance is output of the bar code based on the recognition distance. For optimizing the class reference vectors and a feature extraction matrix in order to train an efficient recognition.

A survey conducted by Mr. Nachiket, A Rathod, Dr.Siddharth A. Ladhake Detecting and Decoding Algorithm for 2D Barcode.There can be classified the 2D Barcode mainly in two types which are matrix 2D barcode stacked 2Dbarcode.The structure of types of 2D barcode is discussed in this paper in brief.[2] The flowchart of detecting 2D barcode proposes this paper and the 2D barcode also decoding.

Lyons, S, Kschischang, F.R.developed Two-Dimensional Barcodes for Mobile Phones, For a high data density barcode there are several potential applications by mobile phones, that can be easily decoded and photographed, but currently no such symbology exists. [3] As a result, for exploiting the camera phone channels low-pass characteristic a new barcode was designed and with mobile phones as a means of facilitating

wireless optical communication is presented. With encoding done in the Discrete Cosine Transform domain a channel model was established and subsequent simulation results led to the design of a color barcode.

3.PROBLEM DEFINITION

To develop a handy barcode generation and reading system so as to make its use for day to day life. The aim of the proposed system is to secure the larger data using barcodes so that the data is not accessed by the unauthorized and unethical users. The proposed barcode has a high capacity of encoding the large amount of data. The proposed barcoding and barcode modulation technique makes use of the latest

technology for generating and reading the barcodes and thereby avail users to securely transmit the data.

4. IMPLEMENTATION DETAILS

4.1. Existing System Architecture

The existing system is not able to perform quickly and efficiently. The existing system is using 2 D barcode which contains less data. It does not provide any mechanism for error handling inside the barcode. It does not used the server for transmission .It uses camera for the reading the barcode which leads to image degradation.
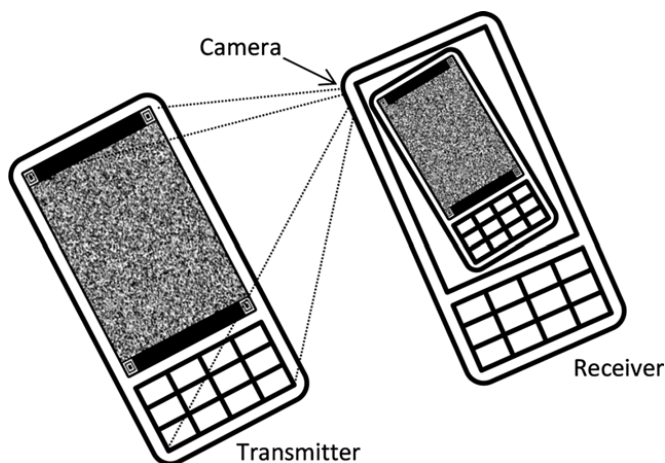

Figure 1: Existing System Architecture

4.2. Proposed System Architecture

Barcode modulation for High capacity 2 D barcode for large textual data transmission using mobile phones. Following are the steps for generating the barcode of proposed system:
Initially we need to use the new technique of barcode generation and normal 2D barcodes are scanned and read by much free application in available freely.
1) Initially we need to use the new technique of barcode generation and normal 2D barcodes are scanned and read by much free application in available freely
2) So in order to secure our data, we need to design a new barcode generation and reading technique so that we no other Application can read the barcode and the data is secured.

3) Also, to assure the data security, we also generate the barcode of the encrypted data, as even if the barcode is decoded, it is not in the plain text format, instead it will be in the Cipher text format which is to be further decrypted using the corresponding keys.
4) The aim of the system is to allow large amount of sensitive data to be transmitted to the mobile devices over internet or any other resource.
5) The sensitive data is provided two level securities with encryption and the barcoding technique.
6) The Barcode specification and details are

Figure 2: Barcode Specification

a) Barcode length=448
b) Barcode Height =63

Figure 3: Proposed System Architecture

4.3 Security Measure in proposed system.

1) As the proposed system barcode is read by software application without the hardware, the proposed system includes a security measure to avoid unauthorized users from reading the barcode.
2) Before the sender creates a barcode, user first selects the receiver to whom the file is to be sent. The receivers username is then written in barcode so that while receiver gets the barcode, first the logged in username and barcode written username is matched for determining the authenticated user
3) If username matches the signature on barcode, only then the barcode is read else barcode reading is avoided

4.4. Mathematical Model

Sender Module :(Barcode Generation):
Set (S) = fs0, co, s1, s2, s3, s4, c1, s5, s6, s7
1) S0- sends login credentials to server
2) S2- select file to be encode
3) S3- generate hash value of input file
4) S4- sends hash value for validation
5) S5- encrypt the input data
6) S6- generate barcode
7) S7- uploads barcode to server
Receiver Module: (Barcode Decoding):
Set (R) =fr0, c0, r1, c4, r2, r3, c5, r4, r5

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1) R0- sends login credentials to server
2) R1- selects barcode from uploaded barcode
List
3) R2- decode hash value from barcode
4) R3- send hash value for data existence
5) R4- decrypts the received encrypted data
6) R5- download decrypted data

Server Module:
Set (C) = s0, r0, c0, s4, s7, c1, c2, c3, r1, c4, r3, c5
1) C0- sends login status to sender and receiver
2) C1- sends comparison status to sender
3) C2- check for same hash value is present
Or not
4) C3- make entry log for encoded barcode
5) C4- send selected barcode to receiver
6) C5- sends encrypted data to receiver
Union and Intersection of sets:
1) Set (S) = fs0, co, s1, s2, s3, s4, c1, s5, s6, s7
2) Set (R) = fr0, c0, r1, c4, r2, r3, c5, r4, r5
3) Set (C) = fs0, r0, c0, s4, s7, c1, c2, c3, r1, c4, r3, c5
4) Set (S U C) = fs0, co, s1, s2, s3, s4, c1, s5, s6, s7, c2, c3, c4, c5, r0, r1, r3
5) Set (R U C) = f r0, c0, r1, c4, r2, r3, c5, r4, r5, s0, c0, s4, s7, c1, c2, c3, c4, c5g
6) (S \ C) = fs0, c0, s4, s7, c1g
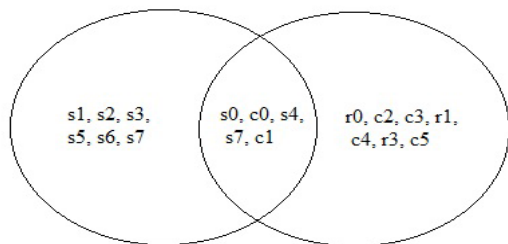7) (R \ C) = fr0, c0, r1, c4, r3, c5g
Venn diagrams:
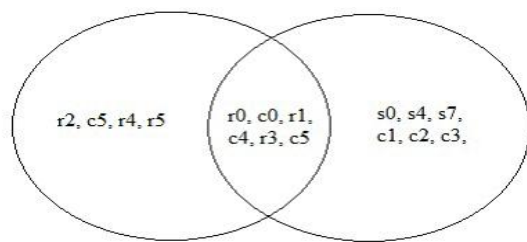

Figure 4: S Intersection C

Figure 5: R Intersection C

5. EXPERIMENTAL RESULTS

5.1. Screenshots of implemented screens

The project is going to increase the security for transmission of high amount of data over mobile media. We generate the 32 hexadecimal bytes of the large data using MD5 algorithm to get the unique code for the encoded data. This hash value is encoded on the barcode, and the corresponding hash value
and the data entry is made in the server .While receiver has the barcode, receiver application reads the barcode and gets the hash value of the encoded data from the barcode, this hash value is then sent to the server to authenticate whether such hash value entry is done to the server. If the hash is found, the corresponding data entry made during barcode generation is

sent to the receiver application. Following are the some screen which we have developed in this project.
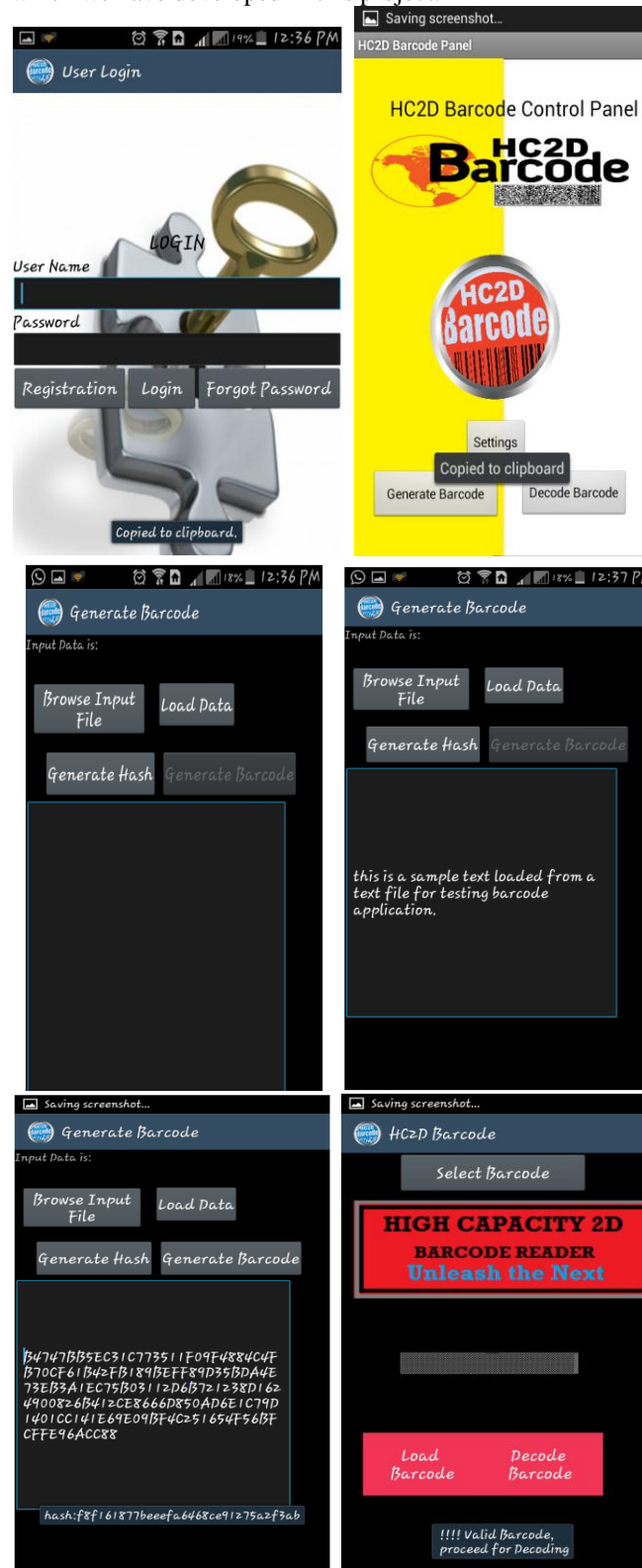

Figure 6: Result Screens

6. Conclusion

Thus, in a general setup of barcode standalone systems, any
File on a cell phone, for example, can be transferred to a second cell phone through a series of images on the LCD which are then captured and decoded through the barcode scanner of the second cell phone. In the proposed system, a new approach for data modulation in high capacity 2-D barcodes is introduced, where in the High capacity 2 D barcode of 448*63

pixels is used to barcode the data and thereby transmitted through any wireless or wired medium.

The proposed barcode has a high capacity of encoding the large amount of data by making use of MD5 secure hashing algorithm for uniquely identifying the data. The data is hash using MD5 algorithm and thereby retrieved by cross hashing the values decoded from the barcode. The proposed barcoding and barcode modulation technique makes use of the latest technology for generating and reading the barcodes and thereby avail users to securely transmit the data .In this project we have generated the Barcode system for mobile device for transmission of high amount of data over mobile devices which will provide the high security to the data. In future we can implement the same system for the large systems such as windows for transmission of high amount of

data with high security.

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