# A Survey on Enhancement of digital business using QR

**Uriti Archana[1], Yetchina Santosh[2], Tavva Praveen kumar[3], Palli Rojitha[4], Saladi Jitendra[5]**
**Department of Information Technology[1,2,3,4,5]**
**GMR Institute of Technology[1,2,3,4,5]**



## Abstract

QR code is the "quick response" code designed to handle a large amount of data by decoding at high speed. It can be captured by any managed device like a mobile and easily accessed by scanning the 2D matrix code. The dataset is analyzed using machine learning approaches such as the confusion matrix score used for the performance analysis of the multinomial naive Bayes algorithm. Count vectorizer is used here to convert the text into vector form and TFID vectorizer is used here to transform the text to feature vectors which can be used as the input estimator. So that the best parameter values are searched from the grid of parameters using the GridsearchCV method. Usage of QR increased rapidly in the present market by having the benefit able results for the customers like quick, error-free access and the capacity to store a large amount of data. They are beneficial for a cashless society as well, since many merchants have signed up with various e-wallet businesses like Paytm, free charge, etc. Due to these benefits, the use of QR has spread all over the world. Finally this paper provides a clear idea of shopping through QR code.

**Key Words:** Confusion matrix ,QR code ,Count vectorizer ,GridsearchCV ,Python tkinter

**DOI Number: 10.14704/nq.2022.20.13.NQ88119** **Neuro Quantology 2022; 20(13):930-935**

## Introduction

Nowadays the popularity of QR codes grows rapidly with the use of smartphone users. A QR code is made up of white background with a square grid of black squares which can be read by a camera or any other image device. Here we are analyzing the product data by converting the textual information into vectors and processing using the TF-IDF vectorizer. After successful conversion of data into the vector form, these vectors are given to the classification algorithm which gives the output as product category when given the input as description. Now, these products are given a single QR code so that the customers can shop easily by scanning the QR. hence the attractive web page is created by using CSS and js which is user-friendly and helps the customer by giving a clear view of the products finally the rating given by the customer is analyzed by using sentimental analysis and shows whether the product is rated good or bad. Since it connects many identities in a single domain while masking

information from public view, the QR code modernizes product or personal identification.

## Literature Survey

Using QR Codes to Authenticate Products: A Mobile App to Fight Counterfeiting was introduced by the authors M. Bala Krishna., et al. This paper tells about the Detection of QR for a piece of single product information with authentication. QR is primarily used for safe and secure transactions. The encrypted QR contains a large amount of data that can be represented on the horizontal axis and vertical axis. The capacity of QR code can be dependent on encoded data type and error correction level, The REED-Solomon algorithm is used here i.e; forward error correction this algorithm helps in recovering the corrupted messages by using the encoder and decoder. The encoder part of this algorithm adds the parity bits with the original bits and the decoder part of this algorithm decodes that information and recovers from the error by detecting the corrupted messages. In this proposed approach the QR is generated for a single product. Here, the product qualities are used to determine whether or not the product is authentic, and a server is kept up to thoroughly update the product list. [1].

Iuliia Tkachenko, William Puech, Senior Member, IEEE, Christophe Destruel, Olivier Strauss, Jean-Marc Gaudin, and Christian Guichard developed a two-level QR code that allows for the sharing of private messages and the validation of documents. The strategy suggested. The project QR (quick response code) is principally used for storing some data and high-speed applications. Generally during this paper QR has two level storage layers which will be used for document validation. A QR code is encoded to the knowledgeable into binary format, A black or white module serves as the representation for each information bit. Using the traditional generation approach, the public message Mpub is included within the common QR code. The following sequence of stages is part of the typical QR code creation method. First, by examining the message content, the best mode (alphanumeric or numeric) is selected. The private level of the 2LQR code's replacement of black modules with textured patterns relevant to the codeword C private is its intended use. Columns and columns from the bottom to the top of the correct corner of the QR code must be used to replace the black Modules [2].

The acronym "QR" stands for "Quick Response." Denso Wave Corporation in Japan created it. A two-dimensional barcode called a QR code can encode more data than a one-dimensional barcode. The use of QR codes has become widespread worldwide as a result of these advantages. The study makes an effort to emphasize QR codes, their features, functionality, importance, and drawbacks. It's crucial for the scanning Not everyone is familiar with QR codes. As a result, not everyone who sees a QR code symbol will grab his phone and snap a photo of it. Additionally, not everyone owns a camera phone, and many smartphones lack a QR scanner. Additionally, consumers can be taken to a website that does not properly show on a mobile device. The written code on the product cannot be scanned if it is completely broken during transportation [3].

Bayesian Naive Bayes classifiers to text classification authors of this paper described. The naïve Bayes is that the collection of classification algorithms depends upon the Bayes theorem. An approach to probabilistic learning may include the Multinomial Naive Bayes algorithm. A naive Bayes classifier is a grouping of several algorithms based on the idea that each feature being categorised is distinct from the other features. The absence or presence of one characteristic has no bearing on whether the opposing trait is present or absent. One of the Naive Bayes algorithms used in machine learning is called the Bernoulli Naive Bayes, and it is excellent for usage in binary distributions where the output label may be missing or present. It is best utilised when the output label is either present or missing and the dataset has a fairly binary distribution. This algorithm's greatest benefit is that it only accepts [4].

The study's researchers, using a matrix known as the confusion matrix, the effectiveness of the classification models for a particular set of test data is assessed. It cannot be determined until the test data's true values are known. Even though the matrix itself is straightforward, some of the terminology associated with it might not be. It's also known as an error matrix. FEATURES: For the two prediction classes made by the classifiers, the matrix is a 2*2 table, a 3*3 table for the following three classes, and so on. Actual and expected values, as well as the total number of predictions, are the two dimensions of the matrix. Actual values are the true values for the given data, whereas projected values are estimated values [5].

In this paper, the author explains the merging of evolutionary and SVM algorithms for the optimal multi-fault classification of gears. Examining the performance of the SVM technique's multiclass capability while improving The primary goal of the paper is to compare the effectiveness of its parameters with the grid-search technique, the optimization algorithm (GA), and the ephemeral algorithm. The model selection learning package includes a library function called GridSearchCV. GridSearchCV is a technique included in the Scikit-learn (or SK-learn) model selection package. It is essential to note that the Scikit Learn library has to be set up on the computer. Thus, we may ultimately select the optimal parameters from the list of hyperparameters. GridSearchCV evaluates the model using the Cross-Validation technique for all possible combinations of the dictionary-supplied variables. By using this function, we can ascertain the accuracy and loss for each collection of hyperparameters and choose the combination that provides the greatest performance [6].

In this paper, the author clears that Python gives several options for developing a Graphical

computer program (GUI). When compared to any or all the Graphical user interface methods, The approach that uses Tkinter the most effectively. It uses the standard Python interface for the Tk GUI toolkit. The architecture of this layer is the graphical user interface. This layer's primary goal is to create graphical user interfaces for scripts that automate the process of doing experiments. We implemented and are being used to operate the main packages Tkinter modules Tkinter module gives the event loops for the receives user events such as button pushes, keystrokes, mouse movements, and window resizing over operating system-controlled window components. It offers a callback that may be used as a configuration, similar to "command" for button widgets, and given to a method in Python code. A series of Python commands are carried out concurrently with interface updates in this new thread. Additionally, the widget that calls it keeps responding to any user interaction. [7].

Using Multiple Classifiers, Multiclass Text Classification and Analytics to Improve Customer Support Response In every industry, customer relationship management (CRM) is essential to the operation of the organisation. Providing effective customer support in a complicated business context is never easy. The area of machine learning known as natural language processing (NLP) deals with the comprehension and creation of language in both spoken and written form. Text classification, commonly referred to as subject classification, is a method for categorizing sections of text. Using is used to carry out the automatic text classification task. effective machine learning approaches include the Randomized Forest, Classification algorithm, Decision Tree, Basis of certain characteristics, SVMs, and Neural Networks, among others. Multinomial Naive Bayes (MNB): A probabilistic classifier, the Naive Bayes classifier is based on the Bayesian hypothesis with prior and conditional probability. SVM accuracy for the provided dataset is 63.02 percent. The model will helps application engineers in categorizing automated detection of faults. This procedure will be enhanced the process of defect classification to be accurate and efficient. Any text dataset can be used with this model, and it can also be applied to any issue that is similar [8].

It has been determined that one of the most frequent NLP tasks is emotional evaluation. Emotional analysis is receiving a great deal of attention these days. The conclusion of the research is that client categorisation and emotional development pose the greatest challenges. Sentence-level categorization aims to group different positive or negative phrases according to the emotion they express. High vectors are those produced from reviews with at least a 4-star rating, while unfavourable vectors are those generated from 1- and 2-star comments. Prepare neutral class vectors according to 3-star reviews. Sentiment analysis, often known as opinion mining, is the study of people's thoughts and emotions concerning various objects. This essay addresses a fundamental issue of emotion [9].

This essay's authors provide in-depth information on creating website design using HTML and CSS. The creation of webpages that provide the greatest spectator experience is the aim of responsive web designing. Responsive web design's primary idea is to scale information to match the size of the screen without hiding any content or altering the way the layout appears. Since an increasing number of people are accessing websites using portable electronics, it has become essential to build websites with adaptable code. Now that websites are adaptive to users' requirements and the devices they are utilising, shoppers may easily access content. The size and capacity of the gadget influence how the site is structured. A modern website may help any company increase its visibility to potential customers. Websites are often used by businesses, institutions, organisations, and individuals for audience and customer engagement. Users may enter data into gadgets with a mouse or their fingertips, and there are various web browsers, screen sizes, and resolutions. There are also distinctions between the systems and browsers. Responsive web design is not "one size fits all" for all devices [10].

Sentiment is a method for determining out whether a block of text is positive, negative, or neutral. Data sentiment analysis is a highly helpful tool for expressing the opinions of the general public, a group, or an individual. Here, naive Bayes, k-nearest neighbor, and random forest approaches are used to analyze movie reviews. To decrease duplication and remove noise, data cleaning must be done first. The token is afterward delivered and saved for analysis, and an algorithm is employed. The algorithms used were Random Forest, K-Nearest Neighbor, and

Naive Bayes. Using a Nave Bayes classifier, the best results were obtained. The Naive Bayes classifier had an accuracy of 81.45%, the Random Forest classifier had an accuracy of 78.65%, and the K-Nearest Neighbor classifier had an accuracy of 55.30%. Consequently, these are utilized in this instance to illustrate the polarity of movie review tweets [11].

In the modern era, communication is a crucial part of everyday life. People have therefore been interacting with one another through a variety of media from the beginning of time. In modern era, communication is a crucial part of every day life. People have therefore been interacting with one another through a variety of media from the beginning of time. Firebase Storage was developed for software developers that need to store and provide user-generated information, such as images or other types of data. It provides security file transfers and downloads for Firebase apps irrespective of the network situation. Firebase Storage is provided by Google Cloud Storage, a powerful, user-friendly, and expense object storage server. Currently, a lot of developers are creating messaging applications using web services like Firebase, which offer real-time database integration capabilities. In the sense that it offers developers a comprehensive solution, Firebase is a step in the right direction for application development. Since more businesses will follow in its footsteps, application development will be significantly faster and more effective [12].



## COMPARISION TABLE :

| Author name | Journal name | Approach | Accuracy | Advantages |
|---|---|---|---|---|
| M. Bala Krishna, et.al | Wireless Personal Communications | In this proposed approach is qr generated for a single product. | 92% | determining if a thing is authentic or not. It is based upon characteristics. |
| Iuliia Tkachenko, et.al | IEEE Transactions on Information Forensics and Security | Another strategy involves adding an imperceptible watermark on the QR code picture. | 82% | Despite being ciphered and consequently only viewable to authorized users and also the general public can always access the data contained in a QR code. |
| Sangeeta Singh | IJARCS | QR code can store complex information within a small code | 71% | If the part of the code symbol is damaged or dirty, data can be recovered. |
| Shuo Xu | Journal of Information Science | Bayesian Naive classifiers | 95% | Many machine learning algorithms are taught to categorise data automatically rather than by hand. |
| Chaman Verma, et.al | Int. J. Eng. Technol | During this test case, we trained the dataset by applying supervised machine learning algorithms. | maximum accuracy is 75% and the lowest accuracy is 68% | It gives better accuracy compared to other supervised learning algorithms |
| D.J. Bordoloi, Rajiv Tiwari | Mechanism and Machine Theory | The data set was subsequently randomly divided into distinct training sets and test sets using supervised learning methods and the grid search strategy. | 68.33% to 90.83% | The test sets were distinct, and the results reliability might be improved. |
| D. B. Beniz, et.al | User Interface and Tools, WEPOPRPO | The preferred method for building a Tk/Tkinter interface is to use grids and nested frames. | 92 % | For the attractive interface, it provides a layout to the Tk GUI toolkit. |
| PiyushSingh Parmar et.al | ACCAI | To use the raw datasets for model training with a machine learning algorithm, they must primarily be processed, transformed, and cleaned (K-Nearest Neighbors: K-NN classifier, etc) | 63.02% | The approach helps assist application engineers in automatically classifying faults. |
| Xing Fang et.al | Journal of Big Data | Sentimental analysis | 88.3 % | It shows that both review-level classification and sentence-level categorization have been done automatically. |

| | | | | |
|---|---|---|---|---|
| Mukesh Arora et.al | ICRAIE | Quick Response Code offers a practical method for encrypting and transferring data in computerized systems, which are widely used for digital marketing, | 69% | encoding and decoding are the providing best extraction for the raw data |
| Baid, P et.al | IJCA | To remove noise, the data must first be cleaned. Then, the keywords are given a token, which is then subjected to analysis. | 81.4 % | In order to improve outcomes, the best accuracy was provided, and the polarity was discovered. |
| Chatterjee, N et.al | Int. J. Adv. Res. Comput. Sci. Manag. Study | Incorporating a number of Firebase features, messaging system intends to give users a platform for interfacing with one another. | - | The application is adaptable, and it will continue to advance along with technological advancements. |



## Proposed System

List of Modules present in the Proposed System:

- The proposed system tries to implement the accuracy in the results by performing the GridSearchCV technique to extract the best parameter values.
- Count vectorizer is used here to convert the text into words by converting it into lowercase and eliminating the special characters for better understanding.
- QR is generated by using the python Tkinter module with a better graphical design to attract the customer view.
- The system is created in a way that the feedback form will be displayed after all the successful transactions by the customer to know their experience.

## Conclusion

The webpage can be modified using a PHP connection and it can be more secure for the customers also our project gives a clear idea about accessing the products using qr. Since a few years back, the majority of QR codes produced by software have been black. Nowadays, most advertisements have QR codes that are vibrant and unique. Based on QR codes, there is no need to worry about localized damage, the QR code's section being overwritten or deleted, since scanning devices can still recognize their whole information record. People may currently use free colorful QR code services from some websites. It's also not difficult to create a unique QR code for a restaurant. All you need to do to make a QR code is upload a file. after which the QR code is produced by clicking a button. So I propose that our business utilize QR code technology. Till now we have seen a single qr for a single product but now the singer will give the entire shopping experience by simply

scanning. it is also made using free servers without any cost.

## Acknowledgement

The authors acknowledge the Institution for encouraging the research.

## Conflict of Interest

None.

## Funding Source

None.

## References

Bala Krishna, M., & Dugar, A, " Product authentication using QR codes: a mobile application to combat counterfeiting", Wireless Personal Communications, vol. 90, no. 1, pp. 381-398, 2016.

Tkachenko, I., Puech, W., Destruel, C., Strauss, O., Gaudin, J. M., & Guichard, C, "Two-level QR code for private message sharing and document authentication", IEEE Transactions on Information Forensics and Security,vol. 11, no.3, pp. 571-583, 2015.

Singh, S, "QR code analysis", International Journal of Advanced Research in Computer Science and Software Engineering, vol. 6, no.5, 2016.

Xu, S, "Bayesian Naïve Bayes classifiers to text classification. Journal of Information Science", vol. 44, no.1, pp.48-59, 2018.

Verma, C., Stoffová, V., & Illés, Z,"An ensemble approach to identifying the student gender towards information and communication

technology awareness in European schools using machine learning", Int. J. Eng. Technol, vol. 7, no.4, pp.3392-3396, 2018.

Bordoloi, D. J., & Tiwari, R,"Optimum multi-fault classification of gears with the integration of evolutionary and SVM algorithms", Mechanism and Machine Theory, pp. 73, 49-60, 2014.

Beniz, D., & Espindola, A," Using Tkinter of python to create a graphical user interface (GUI) for scripts in LNLS", WEPOPRPO25, pp.25-28, 2016.

Parmar, P. S., Biju, P. K., Shankar, M., & Kadiresan, N,"Multiclass text classification and analytics for improving customer support response through different classifiers", International Conference on Advances in Computing, Communications, and Informatics (ICACCI) , IEEE, pp. 538-542, 2018.

Fang, X., & Zhan, J., "Sentiment analysis using product review data ",Journal of Big Data, vol. 2, no.1, pp.1-14, 2015.

Yadav, P., & Barwal, P. N.,"Designing responsive websites using HTML and CSS", International journal of scientific & technology research, vol. 3, no.11,pp. 152-155, 2014.

Baid, P., Gupta, A., & Chaplot, N.,"Sentiment analysis of movie reviews using machine learning techniques",International Journal of Computer Applications, vol. 179, no.7,pp. 45-49, 2017.

Chatterjee, N., Chakraborty, S., Decosta, A., & Nath, A, "Real-time communication application based on android using Google firebase", Int. J. Adv. Res. Comput. Sci. Manag. Stud, vol. 6, no.4, 2018.