

CHAPTER 2: LITERATURE REVIEW

2.1 Secured graphic QR code with infrared watermark

By: Yu-Mei Wang; Chia-Tsen Sun; Pei-Chun Kuan; Chun-Shien Lu

The barcode is an important link between real life and the virtual world nowadays. One of the most common barcodes is QR code, which its appearance, black and white modules, is not visually pleasing. The QR code is applied to product packaging and campaign promotion in the market. There are more and more stores using QR code for transaction payment. If the QR code is altered or illegally duplicated, it will endanger the information security of users. Therefore, the study uses infrared watermarking to embed the infrared QR code information into the explicit QR code to strengthen the anti-counterfeiting features. The explicit graphic QR code is produced by data hiding with error diffusion in this study. With the optical characteristics of K, one of the four printed ink colors CMYK (Cyan, Magenta, Yellow, Black), only K can be rendered in infrared. Hence, we use the infrared watermarking to embed the implicit QR code information into the explicit graphic QR code. General QR code reader may be used to interpret explicit graphic QR code information. As for implicit QR code, it needs the infrared detector to extract its implicit QR code information. If the QR code is illegally copied, it will not show the hidden second QR code under infrared detection. In this study, infrared watermark hidden in the graphic QR code can enhance not only the aesthetics of QR code, but also the anti-counterfeiting feature. It can also be applied to printing related fields, such as security documents, banknotes, etc. in the future. With the rapid development of science and technology, it becomes more efficient on all kinds of information transmission, processing and storage. Through the two-dimensional barcodes, it can connect the virtual world and the reality, which the most typical two-dimensional barcode is QR code (Quick Response code). However, the QR code is only interpreted by the QR code reader. It is not aesthetically pleasing for human eyes, and many researchers have been working on the beautification of QR code.

Moreover, it is widely applied in our daily life for its advantages, such as fast decoding, error correction capability, low cost, and so on. For example, people can take part in the prize draw through scanning the QR code. Besides, people can carry out financial transaction also by scanning QR code. Once the QR code is altered, it may be linked to unknown websites, which will endanger the information security of users. Therefore, QR code needs to enhance its security features. This paper examines QR Codes and how they can be used to attack both human interaction and automated systems. As the encoded information is intended to be machine readable only, a human cannot distinguish between a valid and a maliciously manipulated QR code. While humans might fall for phishing attacks, automated readers are most likely vulnerable to SQL injections and command injections. Our contribution consists of an analysis of the QR Code as an attack vector, showing different attack strategies from the attackers point of view and exploring their possible consequences.

2.2 Fast Component-Based QR Code Detection in Arbitrarily Acquired Images

By: Luiz F.F. Belussi & Nina S.T. Hirata

Quick Response (QR) codes are a type of 2D barcode that is becoming very popular, with several application possibilities. Since they can encode alphanumeric characters, a rich set of information can be made available through encoded URL addresses. In particular, QR codes could be used to aid visually impaired and blind people to access web based voice information systems and services, and autonomous robots to acquire context-relevant information. However, in order to be decoded, QR codes need to be properly framed, something that robots, visually impaired and blind people will not be able to do easily without guidance. Therefore, any application that aims assisting robots or visually impaired people must have the capability to detect QR codes and guide them to properly frame the code. A fast component-based two-stage approach for detecting QR codes in arbitrarily acquired images is proposed in this work.

In the first stage, regular components present at three corners of the code are detected, and in the second stage geometrical restrictions among detected components are verified to confirm the presence of a code. Experimental results show a high detection rate, superior to 90 %, at a fast speed compatible with real-time applications. Compared to traditional 1D barcodes, 2D barcodes can encode a larger amount of data, including alphanumeric characters. QR code, which stands for Quick Response Code, is a type of two-dimensional code introduced by Denso Wave in 1994 . They have been designed to be easily found and to have its size and orientation determined under bad imaging conditions. In addition, ISO/IEC 18004 specifies an error correction scheme that can recover at most 30 % of occluded or damaged symbol area. The existing decoders, easily found for mobile devices, are able to work correctly only if codes are properly framed, with code region corresponding to at least 30 % of the image. When exploring an environment, visually impaired or robots will not be able to capture such images unless they are told where those codes are located. Thus, in order to make useful applications for them viable, detecting the presence of a code in an image is a necessary step prior to the decoding process.

2.3 Creativity and artificial intelligence

By: Margaret A. Boden

Creativity is a fundamental feature of human intelligence, and an inescapable challenge for AI. Creativity is not a special & faculty nor a psychological property confined to a tiny elite. Rather, it is a feature of human intelligence in general. It is rounded in everyday capacities such as the association of ideas, reminding, perception, analogical thinking, searching a structured problem-space, and reflective self-criticism. Current AI models of creativity focus primarily on the cognitive dimension. The ability to produce novelties of the former kind may be called P-creativity, the latter H-creativity. P-creativity is the more fundamental notion, of which H-creativity is a special case. For its concepts evolve as processing proceeds. This research is guided by the theoretical assumption that seeing a new analogy is much the same as perceiving something in a new way. A part- built description that seems to be mapping well onto the nascent analogy is maintained and developed further. Whether the approach used in Copycat is preferable to the more usual forms of mapping is controversial.

2.4 Selection of relevant features and examples in machine learning

By: Avrim L. Bluma

More generally, weighting methods are often cast as ways of merging advice from different knowledge sources that may themselves be generated through learning. In this light, the weighting process plays an interesting dual role with respect to the filter methods discussed earlier. Filter approaches pass their output to a black-box learning algorithm, whereas weighting approaches can take as input the classifiers generated by black-box learning algorithms and determine the best way to combine their predictions. Each of these approaches shows improvement over use of all features, but only the latter reports comparisons with a simple selection of attributes. This suggests a second broad type of relevance that concerns the examples themselves, and here we briefly consider techniques for their selection. Researchers have proposed at least three reasons for selecting examples used during learning. Another reason is if the cost of labelling is high, but many unlabeled examples are available or are easy to generate. Yet a third reason for example selection is to increase the rate of learning by focusing attention on informative examples, thus aiding search through the space of hypotheses. The learner can also select data even before it has been labelled. This can be useful in scenarios where unlabeled data is plentiful, but where the labelling process is expensive. One generic approach to this problem, which can be embedded within an induction algo-rhythm that maintains a set of hypotheses consistent with the training data, is called query by committee. Given an unlabeled instance, the method selects two hypotheses at random from the consistent set and, if they make different predictions, requests the label for the instance.

2.5 A RESEARCH PAPER ON WEBSITE DEVELOPMENT OPTIMIZATION USING XAMPP/PIIP

By: J Forcier

Website Development is like house building, before house building process, we ask to an architect about plan, building permit, oversee a survey of geological and license from city. All things must have to see in the website development requirement, designing, documentation, appropriate server and programming language etc. This research paper discussing the various useful tools and techniques that are used in a development of a website. Invention and Development is a significant role plays in Web Development. Graphical looks and feel according to most impressive and efficient way. Graphical elements required for design are appearing more impressive, for this, use colour and image. Design of web pages, computer graphic includes navigation mock-up, template content and placeholders. Content Writing: Writing of contents is a significant part of development of web pages and plays an important and necessary step in optimisation . A well-defined or easy content is utterly necessary to fall in internet site users. Content written by a more professional requires more pure, easy and accurate content. Coding: Coding start of a Web Pages in CSS, HTML, PHP, Java scripts and other technologies of WWW, for drawing of the graphic and text contents, we look code of web page consistently like as webpage design. Coding of a web page is loading fast search engine and index give us rank very quickly.

Every web page of a website takes a unique title, unique meta tags as keywords and descriptions. We can create links of internal with keywords of website to explore the search engine ranking and navigation. In this way improve the website quality code by using techniques and tools according to website standards. In Xampp, we will have a docs folder and store the folder where, we will have website code scripts and we can open these scripting languages in sublime text. So, at last we have a website that can open in local host in system and outlook can see in local web server. Developer can easily change into code according to the requirement after looking on the local host preview. Another point is security features also included, another system we cannot see it without docs folder and updation also not possible.

2.6 Data Security Over Internet : Value Of Data And Platform At Which Data Privacy is Risked Or Stolen

By: C Berry , M lang

“Data security over internet” is a raised concern long after people and agencies have identified internet beyond as a boon of technology which connects, communicates, researches, identifies and makes our tasks do in instant. With the rise of a new era of crime-cybercrime, internet has now been detected with various loopholes of which miscreants take advantage with advantageous fact that cybercrime is difficult to trace. Here, the discussion is about such platforms or loopholes which the internet users identify it to be unnecessary to be protected like, how their data over internet, over which they work, manipulate or use is in the spy eyes of someone and how do the tech giants and hijackers of our data misuse it for their profits. Most of the social media platforms like Facebook, Instagram uses the customers data as a tool of their marketing. This common marketing tool strategy has resulted in making profits worth of billions against the few countable dollars worth of our data. Various applications serve their definite purposes. These applications when installed on our devices require various applications permissions and from their store our data on their database. So, when we use these Google products, the respective Search Engine has got a lot of potential to steal our data. In fact, Google has almost 1.74 billion registered websites and 4.2 billion webpages total over internet, out of which Google has its trackers on almost 75% websites. This means, Google keeps account of kind of searches, frequency, history of its users for each and every website on its database. As of now, Google has now become more of a tracking and spying company rather than a search engine company. Every time when we use Google products, its trackers are always spying over our searches and needs. But by deliberate allowance to Google to collect all this information, we get compelled to be bid on serving us ads based on our sensitive personal data. With the advancement in the technology of internet, now every impossibility of connection with people; research; computer tasks; communication; utility of resources is bridging to a possible future, yet there have then erupted the stakes and crimes which have been highlighted as the backdrops of internet dependence. Living today’s world without internet is an impossibility or a possibility with efficiency, energy, time, money on no guarantee. However, our aid of internet is now a concerned question of self-privacy and security.

2.7 Research on QR image code recognition system based on artificial intelligence algorithm

QR code recognition technology is a hot topic in the field of digital image processing . With the continuous development of the Internet of things, QR code has been gradually applied in various industries due to its strong information storage capacity, convenient and quick reading advantages, and safe and reliable coding technology. QR codes can be categorized as a 2D matrix code, which is a typical squareshaped code that can be determined by its dimensions and variations.

1-Position markers: This is the position detection indicator of a QR code, which is represented by a small square combined of a lighter and a darker square. It determines the position and orientation of the QR code.

2- Timing pattern: They are responsible for determining the size, the number of rows and columns, and identification of distortion present in the QR code.

3- Version number: This indicator in the QR code helps to identify the version number of the code.

4-Format identifier: This indicator contains the information regarding the mask pattern number and the error correction level, which are needed to decode the QR code for identifying the type of content like URL, text, image, etc.

5- Alignment marker: The alignment markers determine the possibility of distortion in the QR code by identifying the point of alignment in the code.

6- Data indicator: The data encoded inside the QR code is decoded by the usage of this indicator. If the QR code is damaged, still it can be restored and read by using the error correction method.

2.8 Machine Learning Algorithms for Recommender System - a comparative analysis

Recommendation system is an application which is used for prediction in various domains throughout the internet. A large amount of data flows through the internet and it gives away a lot of information regarding the user searching activity. In this paper, we have discussed Content Based Filtering, Collaborative Filtering, Hybrid Content-Collaborative Based Filtering, k-mean clustering Based and Naive-Bayes Classifier based techniques.

ALGORITHMS

1- Content Based Filtering The Content Based Filtering considers the items rated by a user to formulate the future recommendations while exploring the internet services. A user tends to rate an item which he likes or dislikes. His ratings reflect his response towards that item. If he likes an item, he rates it higher and lesser ratings denote that he is not much interested.

2- Collaborative Filtering There can be many users who must be having the same pattern of rating an item as the user intended. This similar pattern of their ratings with the user

guides the Collaborative Filtering. The notion behind the Collaborative Filtering is the recommendation of an item based on the preferences of like-minded users.

3- Hybrid Filtering To cater better precision, a hybrid filtering method is used which can provide the advantages of both the content and the collaborative approaches and can overcome their shortcomings.

4- K-Mean Clustering: The k-mean is a non parametric classification technique. It distributes the items into k clusters according to their proximity to one another. In this paper, this proximity is being measured by using the Euclidean distance. All the objects in a cluster move towards the centroid and the centroid is updated in each iteration. The iteration continues until a saturation point arrives, when the centroid stops altering

2.9 An Introduction to Logistic Regression Analysis and Reporting

By: CHAO-YING JOANNE , PENG KUK LIDA, LEE GARY M. INGERSOLL

In this paper, we demonstrate that logistic regression can be a powerful analytical technique for use when the outcome variable is dichotomous. The effectiveness of the logistic model was shown to be supported by (a) significance tests of the model against the null model, (b) the significance test of each predictor, (c) descriptive and inferential goodness-of-fit indices, (d) and predicted probabilities. During the last decade, logistic regression has been gaining popularity. The trend is evident in the JER and higher education journals. Such popularity can be attributed to researchers' easy access to sophisticated statistical software that performs comprehensive analyses of this technique. It is anticipated that the application of the logistic regression technique is likely to increase. This potential expanded usage demands that researchers, editors, and readers be coached in what to expect from an article that uses the logistic regression technique. What tables, charts, or figures should be included? What assumptions should be verified? And how comprehensive should the presentation of logistic regression results be? It is hoped that this article has answered these questions with an illustration of logistic regression applied to a data set and with guidelines and recommendations offered on a preferred pattern of application of logistic methods.

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tale advantage with advantageous fact that cybercrime is difficult to trace. Here, the discussion is about such platforms or loopholes which the internet users identify it to be unnecessary to be protected like, how their data over internet, over which they work, manipulate or use is in the spy eyes of someone and how do the tech giants and hijackers of our data misuse it for their profits. Most of the social media platforms like Facebook, Instagram uses the customers data as a tool of their marketing. This common marketing tool strategy has resulted in making profits worth of billions against the few countable dollars worth of our data. Various applications serve their definite purposes. These applications when installed on our devices require various applications permissions and from their store our data on their database. So, when we use these Google products, the respective Search Engine has got a lot of potential to steal our data. In fact, Google has almost 1.74 billion registered websites and 4.2 billion webpages total over internet, out of which Google has its trackers on almost 75% websites. This means, Google keeps account of kind of searches, frequency, history of its users for each and every website on its database. As of now, Google has now become more of a tracking and spying company rather than a search engine company. Every time when we use Google products, its trackers are always spying over our searches and needs. But by deliberate allowance to Google to collect all this information, we get compelled to be bid on serving us ads based on our sensitive personal data. With the advancement in the technology of internet, now every impossibility of connection with people; research; computer tasks; communication; utility of resources is bridging to a possible future, yet there have then erupted the stakes and crimes which have been highlighted as the backdrops of internet dependence. Living today's world without internet is an impossibility or a possibility with efficiency, energy, time, money on no guarantee. However, our aid of internet is now a concerned question of self-privacy and security