

# INTELLIGENT SECURITY SYSTEM FOR TRAVELLING

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## ABSTRACT

*Analysis of security for traveling is a methodological approach to the identification of vulnerability while traveling. To spend time with family or friends we go to many tourist places by booking any transport but we always don't know that is the vehicle and vehicle driver are safe for our country or not and at the same time we also don't know the crime rate of the place where we are going to travel due to which we can face trouble and some other crimes. Sometimes we get in trouble when we are out of budget in the middle because we can't calculate things better compared to computers. In general, if we decide to go somewhere for a tour, we first search for the destination place on Google Maps and book a vehicle, but Google Maps neither show the crime rate nor suggest the safest way to reach the destination. Some apps use dynamic pricing for cost estimation but sometimes it can create problems in price automation. In our job, we are going to use KNN(K-Nearest-Neighbors) machine-learning algorithm for both budget prediction and crime rate prediction. Using a QR code we will encapsulate the information of the vehicle and vehicle driver which will be shown to the passenger after they will scan the QR.*

**Keywords:** - crime rate, budget, KNN, machine-learning, prediction, QR code, encapsulate

## 1. INTRODUCTION

In this era of the modern world, we are focusing on all major problem which is happening but we are neglecting the problem that we face while traveling i.e. high cost, harassment, misleading, etc. There are too many concerns related to traveling to unknown places and to make that journey secure we are introducing a system that will provide more control to the users over their rides. First, we are collecting data on the crime rate of all the tourist places in India using APIs for crime rate prediction, and using that the system will also recommend the places where the crime rate is low. Similarly, we will use different data to predict and recommend tourist places based on the user's budget and interest. KNN is the supervised machine-learning algorithm that is used for regression and classification tasks. In both tasks, the input contains the k-closest training examples in the dataset. We are using KNN for regressing tasks. In regression, the algorithm predicts the continuous value i.e. sales prediction, budget prediction, house price prediction, etc.

QR (Quick Response) code is a two-dimensional barcode which is invented in 1994 by a Japanese company. It is a machine-readable label that contains information. QR code is used in a much broader context and a better way to transfer information securely. For implementing the machine-learning algorithm and QR code one of the best programming languages is Python and the same language we are using for our system. Python has many libraries which makes it easy to work with machine learning

OpenCV is a Python library that provides real-time computer vision functionality and it is also used to create a scanner integrated with the software for scanning the QR code.

In this paper, section 1 contains the introduction to the paper, section 2 has the objective of the study, section 3 contains the analysis of the data, section 4 contains the literature review, section 5 has the conclusion of the study and in last we have the references in section 6.

**2. OBJECTIVE OF THE STUDY**

The main aim of this study is to identify the solutions for reducing the problems while traveling and creating a better budget prediction system.

1. To examine how QR can be used to share information.
2. To examine how KNN can be used for budget and crime rate prediction

**3. ANALYSIS**

**3.1 Crime Rate in India**

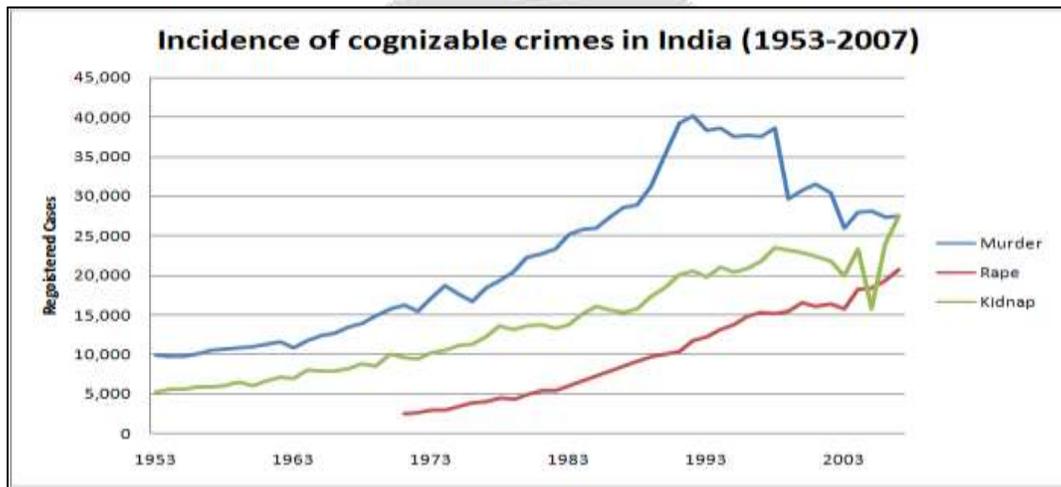


Fig -1: Structure of QR code

**3.2 QR CODE AND ITS STRUCTURE**



Fig - 2: QR code

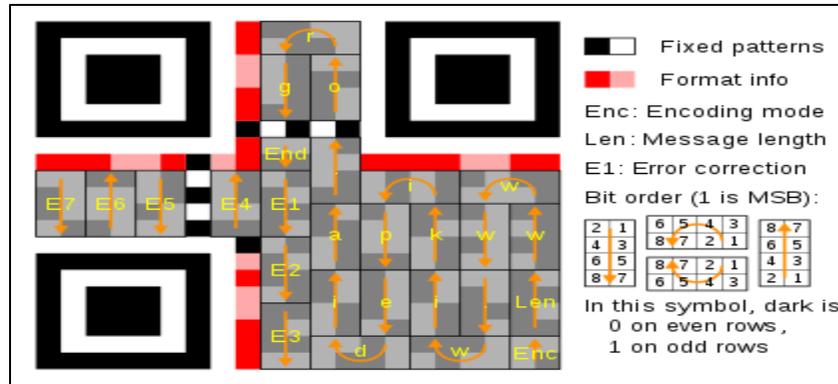


Fig - 3: Structure of QR code

#### 4. LITERATURE REVIEW

Computer vision is the subset of artificial intelligence which trains machines to understand visuals and patterns. Computer Vision mainly does an analysis of data capture from a camera, and due to its applications are effective and useful. Computer Vision can be used for face recognition, motion detection, augmented and mixed realities, object detection, and identification. Research is ongoing to create a mathematical function that can be used to compare and understand the patterns in 3D images. [1,2]

In ref. [3], a brief study on crime rate prediction using Machine Learning and Deep Learning algorithms is presented. Some Machine Learning algorithms, such as Linear Regression, Decision Tree Regressor, Random Forest Naive Bayes, and Support Vector Machine(SVM) have been used in the practice to predict the crime rate and recommend safe places. To overcome the limitations of Machine Learning, Deep Learning is used which is a Machine Learning technic that mines the raw data. The proposed model was trained and tested using a criminal record of over 10 years.

K-Nearest Neighbor (KNN) algorithm is a productive supervised machine learning algorithm. It is used for both classifications as well as regression problems. KNN groups the data into clusters or subsets and classifies the new data in the hypothesis based on its similarity with the trained data. The input data is then classified into the most similar class. K in KNN is used to take a value to find the average or similarity within that k data point. In the regression task KNN calculate the mean of k nearest data points. [6]

Quick Response code is mostly scanned with the help of the camera of electronic devices like mobile phones. QR codes can easily be authenticated through devices like Tablets, Laptops, and personal computers or desktops. The system automatically generates the information that is encapsulated using the QR. The characteristic of QR which makes it reliable is that it can still be scanned even if it is partially damaged. QR codes are 2D barcode and it is used publically which can be vulnerable sometimes because of cyber attackers. It can harm our device by redirecting us to any virus-containing page unknowingly. [4]

#### 5. CONCLUSIONS

Since the crime rate is increasing over the years we should focus on creating a system with intelligence that can suggest public the places where the crime rate is low and give them control over their ride while they are going for a tour to ensure safety. KNN is the algorithm that calculates the mean of its nearest neighbors or data points and using

this machine can predict budget and crime rates very accurately because the situation or pricing is similar for the nearby cities.

## 6. REFERENCES

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