Terrorist Watch List Database Management System

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Abstract. After the attack of 11 September 2001 on USA, the government of USA came up with the solution as "FBI Terrorist Screening Centre" which consisted of Terrorist watch list Database of whole world. As there is always a correlation between the attacks of all the countries so the data is obtained from all the countries. But there are two major problems in the present scenario firstly as every year the data increases by the amount of 20, 00,000 so it has become a very big issue to handle the Database secondly due to this huge database incorrect person is caught because of resemblance of his/her name with the criminal. Example for this false positive is a boy named John Anderson who was stopped at the airport because his name was same as that of criminal's name but John was just a six years old kid. So I came with solution for both the problem as for controlling the database I will delete the records of the criminal who have completed their punishment using operation research technique because those database are of no use so it has to be deleted for convenient usage of database i.e. I am optimizing Database and the solution for problem of false positive can be solved using DNA Database Management System. Using this technique we can solve the major problems for Terrorist watch list Database Management System and reach to the criminal with earliest and easiest manner.

Keywords: DNA Database Management, Operation Research Technique, Simplex Method, organization and Information System.

1. Introduction

Nearly half of the people on the U.S. government's widely shared database of terrorist suspects are not connected to any known terrorist group, according to classified government documents. Of the 680,000 people caught up in the government's Terrorist Screening Database a watch list of "known or suspected terrorists" that is shared with local law enforcement agencies, private contractors and foreign governments more than 40 percent are described by the government as having "no recognized terrorist group affiliation." That category 280,000 people dwarfs the number of watch listed people suspected of ties to al Qaeda, Hamas, and Hezbollah combined. The documents, obtained from a source in the intelligence community, also reveal that the Obama Administration has presided over an unprecedented expansion of the terrorist screening system. Since taking office, Obama has boosted the number of people on the no fly list more than ten-fold, to an all-time high of 47,000. "If everything is terrorism, then nothing is terrorism," says David Gomez, a former senior FBI special agent.

The classified documents were prepared by the National Counterterrorism Center, the lead agency for tracking individuals with suspected links to international terrorism. Stamped "SECRET" and "NOFORN" (indicating they are not to be shared with foreign governments), they offer the most complete numerical picture of the watch listing system to date. Among the revelations:

(1) The second-highest concentration of people designated as "known or suspected terrorists" by the government is in Dearborn, Mich. a city of 96,000 that has the largest percentage of Arab-American residents in the country.

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(2) The government adds names to its databases, or adds information on existing subjects, at a rate of 900 records each day.

A U.S. counterterrorism official familiar with watch listing data told that as of November 2013, there were approximately 700,000 people in the Terrorist Screening Database, or TSDB, but declined to provide the current numbers. Last month, the Associated Press, citing federal court filings by government lawyers, reported that there have been 1.5 million names added to the watch list over the past five years. The government official told that it was a misinterpretation of the data. "The list has grown somewhat since that time, but is nowhere near the 1.5 million figures cited in recent news reports," he said. He added that the statistics cited by the Associated Press do not just include nominations of individuals, but also bits of intelligence or biographical information obtained on watch listed persons.

When U.S. officials refer to "the watch list," they typically mean the TSDB, an unclassified pool of information shared across the intelligence community and the military, as well as local law enforcement, foreign governments, and private contractors. According to the government's watch listing guidelines, officials don't need concrete facts or irrefutable evidence to secretly place someone on the list only a vague and elastic standard of reasonable suspicion. You need some fact-basis to say a guy is a terrorist, that you know to a probable-cause standard that he is a terrorist, says Gomez, the former FBI agent. The National Counterterrorism Center did not respond to questions about its terrorist screening system. Instead, in a statement, it praised the watch listing system as a "critical layer in our counterrorism defenses" and described it as superior to the pre-9/11 process for tracking threats, which relied on lists that were typed or hand-written in card catalogues and ledgers.

So, according to present scenario there is need for having Management Information System to be implemented to manage the data as we saw every year there is a big increase in the data entry of criminals.

1.1. Management

The main step in management is to develop a strategy and I have suggested a strategy as to make a DNA Database Management System as there is a problem of false positive i.e. A person other than the criminal is caught hence the police are trained in such a way that they obtain details of DNA from the evidence that is found and this the way we achieve our goal to reach the criminal.

1.2. Organization

In organization we organize the whole data section wise as per the works allotted to prisoners and after analysis on that data we obtain the optimized Database Management System. Here we have the data of terrorist that are on the watch list.
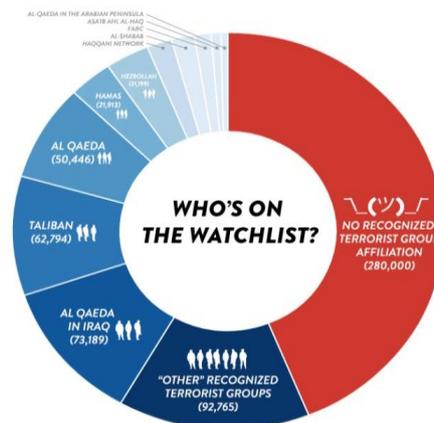

1.3. Technology

We make use of software which does the analysis from present data and obtain the optimal table using which the manager takes important decisions. Database Management System consisting of storing huge data capacity is required.

1.4. Information System

This is the most important step in which the manager do analysis on processed data i.e. according to our data we obtained result as how many prisoners have completed punishment and how many people have not completed. So here is the way that we collect the data from all the countries of world and obtain terrorist watch list database.

The government can directly extract the database from the Terrorist Watch List Database so the strict action can be taken like if a criminal name is found to match with any person than at that moment only his/her visa is banned on airport. It helps to enhance communication between agencies of different countries but there are two drawbacks which is false positive and not optimized result. The senior most professor of university was stopped at airport and sent to prison because of his name resembling to criminal. So these kinds of problems are removed by the idea proposed in this paper.
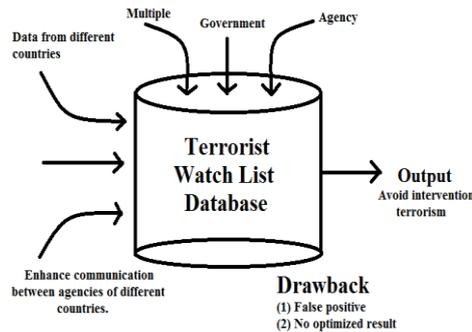
2. Proposed Algorithm

To solve given problem we first formulate our problem into Linear Programming Problem (LPP) and then we solve it using Simplex Method. So the algorithm for Simplex Method is given as:

1. Standard Form:
   Convert a given equation into standard form by adding slack or surplus variable.

2. Canonical Form:
   In a given Linear Programming Problem each constraint must contain Basic variable.

   Basic variable:
   A variable which has unit coefficient in one of the constraints and zero coefficients in remaining other constraint is called Basic variable.

3. Formulation of Simplex Table:
   It consists of decision variables, basic variables, solution, ratio, Cj and Zj.

   $$Z_j = \sum_{i=1}^{n} (CB_i) * a_{ij}$$

   Where CBi is coefficients of decision variables and aij is technological coefficients.

4. Optimality Condition:
   i.   For a problem of maximization type:
   $$\forall (C_j - Z_j) \leq 0$$

   ii.   For a problem of minimization type:
   $$\forall (C_j - Z_j) \geq 0$$
   If the above two mentioned criteria satisfies than we have reached optimal condition and got the most optimal table.

2.1. Table Formulation

We formulate our given problem to LPP as:

Type of crime made by prisoners	Types of good work allotted to prisoners in jail.			Number of prisoners in each crime
	W1	W2	W3	
Crime of Rape	2 years	4 years	6 years	24 prisoners
Crime of Terrorist attack	3 years	9 years	6 years	30 prisoners
Number of years spent per good work	10 years	15 years	20 years	

2.2. Function

Objective function

$$Max\ W = \sum_{j=1}^{3} cj * xj$$

Subject to constraints

$$\sum_{j=1}^{3} aij * xj \le bi$$

Non Negative restriction

$$xj \ge 0 \qquad i=1, 2$$
$$j=1, 2, 3$$

2.3. Equations

Equations of given LPP is

Objective function

$$Max\ W= 10x1 + 15x2 + 20\ x3$$

Subject to constraints

$$2x1 + 4x2 + 6x3 \le 24$$
$$3x1 + 9x2 + 6x3 \le 30$$

Non negativity restriction

$$x1, x2, x3 \ge 0$$

x1 = number of prisoners completed the good work 1.

x2 = number of prisoners completed the good work 2

x3 = number of prisoners completed the good work 3

cj = total number of years spent per good work

aij = technological coefficient

b1 = number of prisoners who made a crime of rape

b2 = number of prisoners who made a crime of terrorist attack

W =Total number prisoners that have completed their good work in prison

3. Observation

Using Simplex method we get the solution for the given problem. We can delete the name of the prisoners from the DNA Database management system if a prisoner has completed the number of years for punishment and the work that has been allotted to him/her. This kind of work can be easily done with the help of optimal table.

1. Number of prisoners completed good work 1 is 6 prisoners.

2. Number of prisoners completed good work 3 is 2 prisoners.

3. There are no prisoners who have completed good work 2.

4. So according to the data of the prisoners who have completed the good works are observed and if any prisoner satisfies the condition of punishment made by him/her then the prisoner is free from prison and its record from DNA Database Management System is also deleted for making optimized database.

3.1. Optimal Table

Cj		10	15	20	0	0	Solution
CBi	B	x1	x2	x3	S1	S2	
20	x3	0	-1	1	1/2	-1/3	2
10	x1	1	5	0	-1	1	6
Zj		10	30	20	0	10/3	
Cj - Zj		0	-15	0	0	-10/3	

3.2. Sensitive Analysis

Changes in the objective function:

Range for year limit for good work W1:

$$7 <= c1 <= 10$$

So, the year for W1 is of (7, 10) years.

Range for year limit for W3:

$$20 <= c3 <= 30$$

So, the year limit for W3 is of (20, 30) years.

Range for year limit for W2:

$$c2 <= 30$$

So, the year limit for W2 is of less than or equal to 30 years.

4. Result

According to the given data we obtained the result that number of prisoners completed good work 1 are 6 prisoners, number of prisoners completed good work 3 are 2 prisoners and there are no prisoners who have completed good work 2.Hence from the above results the manager can take the following decisions:

1. Manager can decide how much number of years a punishment is to be given to prisoners.

2. Easy deletion of record of any prisoner is carried out using the obtained results.

3. Manager can decide what should be the limit of punishment for every good work.

According to our problem:

Range for year limit for good work W1 is $7 <= c1 <= 10$ so, the limit for W1 is of (7, 10) years. Range for year limit for good work W3 is $20 <= c3 <= 30$. So, the time limit for W3 is of (20, 30) years. Range for year limit for good work W2 is $c2 <= 30$. So, the year limit for W2 is of less than or equal to 30 years. These records are obtained from all over the world so this method helps to maintain all the records in a convenient way.

5. Conclusion
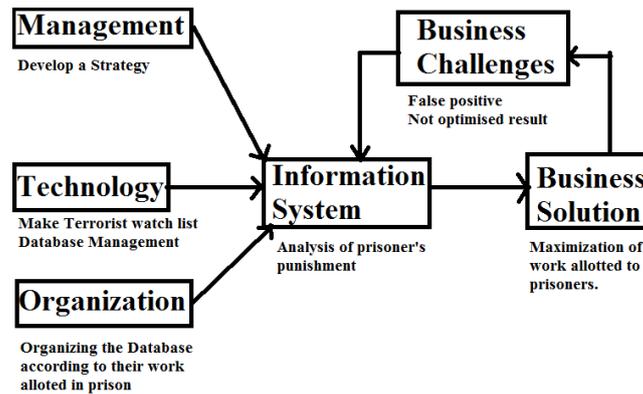
With the help of Management Information System we have solved the two major problems of Terrorist watch list Database System. In Management we develop a strategy of making DNA Database Management System; in technology we make the use of concept of data mining to extract the data easily from database; in Organization we organize the database according to the work allotted to prisoners and in Information System we do analysis on prisoner's punishment. So using Management Information System we achieve the goal of optimizing the terrorist watch list database and solved the problem of false positive.

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