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## GIS AND SECURITY SYSTEM: A CASE STUDY OF BANK ROBBERY

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### Abstract

Security has been major concern of mankind for decades. Various techniques have introduced to provide possible solutions and this list is growing everyday. Most of these techniques are preventive and are mainly used to raise alarms. With growing knowledge and advancement in GIS and GPS technologies there is a possibility of new set of techniques that along with preventive services can provide tracking and control services.

**Keywords:** GIS, Security System

### Introduction

#### Study area

The state bank of India located in Bareilly College in Bareilly city at the latitude 28° 21' 22. 94" North and longitude 79° 25' 22. 60" East.

It is 643.54 meters from city's control room of Uttar Pradesh Police.

#### Hypothesis

The well-planned information of tragedy point, its distance from concern police station and city control point, its connectivity with roads and police checkpoints will be helpful to control the situation

#### Assumptions

Robbers can use car or motor bike as means of transportation

Assumption for car user robbers

- They can not enter narrow streets.
- They will avoid crowdie places.
- They may be equipped with more weapons.
- They will try to run away from the city.

Assumption for motor bike user robbers

- They can enter narrow streets.
- They may enter crowdie places.
- They can not equipped with more weapons.
- They will try to hide within the city.

### Methodology

Based on traffic flow, roads were divided into three types as following:

1. Low congestion Roads - Where vehicle can be move at the speed of more than 1 km / 1 min.

2. Moderate congestion Roads - Where vehicle can be move at the speed of 1 km / 3 min.

3. High congestion Roads - Where vehicle can be move at the speed of 1 km / 6 min.

It was assumed that robbery starts at 12: 00 Noon and end at 12: 30 P.M. Robbers will start moving from bank at 12:35 P.M.

Then there arrival time on different check post was calculated based on simple mathematic calculations. There after the results were used to prepare map with the help of GIS techniques for batter visual interpretations.

#### Robbery scene

12:00 Noon – Robbers enter the bank.

12:30 P.M. – Robbers complete their mission in the bank.

12:35 P.M. – Robbers exit and move from the bank.

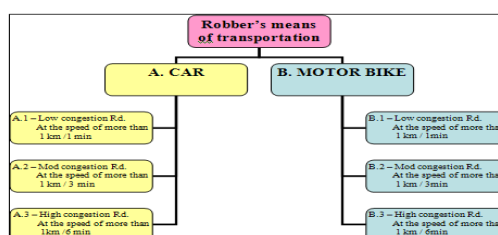
#### Information to city control point

Information to city police control room may be sent at the time of robbery or immediate as robbers will leave the bank.

#### Movements of robbers: car vs. motorbike

Car user will prefer to leave the city from low congested roads they will not enter the local streets, while motorbike users will prefer to remain in the city, they ca n enter narrow streets.

Police action for car used robbery is given as following



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Table : Check Post Name and Traffic congestion type

S.N.	Check Post Name	Road	Traffic congestion type
1	Chaupla	Bank to C.P. -1	Moderate
2	Dula Mian	C.P. 1 to 2	Moderate
3	Qila crossing	C.P. 2 to 3	Moderate
4	Izzatnagar	C.P. 3 to 4	Moderate
5	Satellite Bus St.	Bank to C.P. -5	High
6	Bisalpur crossing	C.P. 5 to 6	Moderate
7	Pilibhit crossing	C.P. 6 to 7	Low
8	Ramganga	Bank to C.P. -8	Low

Key - C.P. – Check Post

Table: Robbers Arrival time at Check Posts

S.N.	Direction	Check Post Name	Arrival time		
1	To Delhi Road	Chaupla	12:41 P.M.		
		Dula Mian	12:50 P.M.		
		Qila crossing	12:56 P.M.		
2	To Nainital Road	Izzatnagar	01:05 P.M.		
		3	To Lucknow or Pilibhit Road	Satellite Bus St.	12:47 P.M.
				Bisalpur crossing	12:53 P.M.
4	To Budaun Road	Pilibhit crossing	01:01 P.M.		
		Ramganga	12:55 P.M.		

## Police action

### A. Time based action

- If police is informed in the mean time of robbery  
The action should be taken in centrifugal direction, in other words from inward to outer.
- If police is informed immediate as robbers leave the bank.  
The action should be taken in centripetal direction, in other words from outward to inward.



### B. Speed based action

- If robbers move by car at the speed of more than 1 km. per minute
- The action should be taken in centripetal direction, in other words from outer to inward. Posts should be high alert situated on highways,
- If there speed is less than 1 km./ 6 min
- The action should be taken in centrifugal direction, in other words from inward to outer. First of all check posts within the city should be high alert then those which are situated on highways.

### C. Points of special action

- All bus, taxi and railway stations.
- Police stations and there check posts.
- Cinema halls, Parks, Hospitals, Educational institutions and other government offices.