



## USE OF 'LIVE FINGERPRINT SCANNER' FOR DISTINGUISHING ILLEGAL IMMIGRANTS

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### Introduction

Increase in number of terrorist attack has been causing huge loss of life and property to the Nation. There has been explosions, ambushes at security patrols, and attacks on paramilitary and army installations, blasts in trains, buses and crowded market places despite substantial presence of uniformed personnel all through the Nation. And when we talk of Jammu & Kashmir, and northeastern bordering States of India, the picture is highly volatile; percentage share of violent crimes to the total IPC crimes during 2002 was 24.<sup>1</sup>

The infiltration from across the border in peripheral villages/towns needs to be checked for controlling escalation in terrorist attacks on Indian soil. During peacetime, border security includes the tasks of prevention of trans-border crimes, smuggling, infiltration, illegal migration, illegal movement of hostiles, and so on. Transgressions along the border

were, in the past, often localized in nature and had no major security implications. Since 1980s, however, with Pakistan's involvement in terrorist violence in India and the subsequent emergence of various countries abutting India's northeast as safe havens for insurgents operating in India, the pattern of border crimes has changed. These are no longer localized in nature, and the intricate relationship between narcotics smuggling, small arms proliferation and terrorist activities now have far reaching implications for internal security.<sup>2</sup>

A rapidly changing internal security environment suggests that border management is not simply a matter of policing along the border. There is a growing realization, now, that border management must broadly include a comprehensive package which involves defending the border in times of war, securing the borders in times of peace, ensuring that there are no unauthorized movements of humans, taking steps against



### Key Words :

Fingerprints,

Illegal immigration,

Live Fingerprint Scanning,

Database,

Personal Identification Number (PIN).



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### Abstract

India has suffered for the past nearly two decades from terrorism in Punjab, Jammu and Kashmir and in northeastern parts of India. Countless innocent lives have been lost to the terrorist's bombs and guns. However, successive Governments have remained tied to a narrow conception of border security, which envisages no more than the establishment of static border posts, regu-

smuggling of arms, explosives, narcotics and other kinds of contraband items, using sophisticated technological devices to supplement human efforts to these ends, coordinating intelligence inputs from various agencies and ensuring the socio-economic development of the border areas.<sup>3</sup>

The Bangladesh border is the longest land border that India shares with any of its neighbours. It covers a length of 4,095 kilometers abutting the States of West Bengal, Assam, Meghalaya, Mizoram and Tripura.<sup>4</sup>

The existing and emerging threats along this border are

conditioned, to a large extent, by the terrain. The border, which was carved out by the Radcliff Line, was not demarcated on the ground. As a result, the border cuts through the middle of several villages and in some cases, while one section of a house is in one country, another is in the other. In West Bengal, for instance, there are more than 100 villages located right on the zero line, and in many villages there are houses where the front door is in India and the rear door opens into Bangladesh.<sup>5</sup>

The Census report of 1991 observed that when the average density of population in the

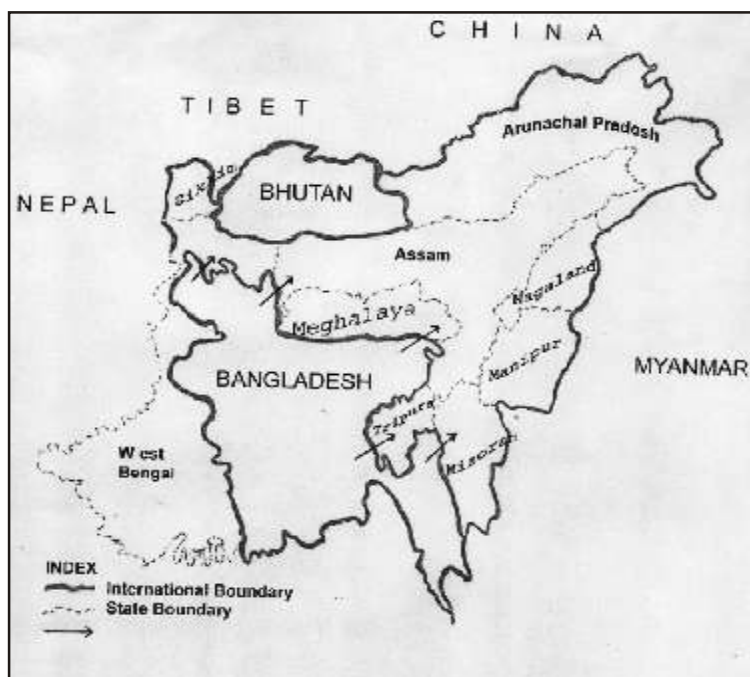


Fig. Map showing Indo-Bangladesh border. The arrows (→) indicates the entry points of illegal migrations to Indian States from across the border.

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country rose by 51 persons per square kilometer over the 1981 level, West Bengal recorded a quantum increase at 151 persons per square kilometer.

In a status paper on illegal immigration filed in January 1999 in the Supreme Court in response to a petition, the Government of West Bengal admitted that 12,40,000 Bangladeshis who entered the State with travel documents had simply melted away into the local population, while another 5,70,000 had been pushed back into Bangladesh between 1972 and 1998. The document stated that, till 1997, the intercepted infiltrators were summarily pushed back, but after 1997 this practice was discontinued.<sup>6</sup>

Thus, according to Partha Ghosh, in some Districts, the Bangladeshis in their desperate bid to seek refuge in India have even hijacked the legal procedure of immigration.<sup>7</sup>

### **Measures being taken by the Government to check illegal Immigration:**

The Government of India is deeply concerned about the deteriorating law and order situation in bordering areas. Apart from its emphasis in J&K, it is not taking any chances on the eastern front as well. The Border Security

Force (BSF) is taking the responsibility of checking unauthorized entry into Indian Territory. The BSF is deployed all along the 4095.7 kilometers of borders that the States of West Bengal (2216.7 kilometers), Assam (262 kilometers), Meghalaya (443 kilometers), Tripura (856 kilometers) and Mizoram (318 kilometers) share with Bangladesh.<sup>8</sup>

At present, 37 battalions of the BSF man the border, and there are 714 BSF Border Outposts located along its length. The front wise average distance between Borders Outposts is as follows:<sup>9</sup>

- South Bengal : 5.2 kilometers
- North Bengal : 5.9 kilometers
- Assam, Meghalaya, Manipur and Nagaland : 5.1 kilometers
- Tripura, Cachar and Mizoram: 6.1 kilometers.

The Border Security Force (BSF) arrested 776 Bangladeshi infiltrators along the Assam-Meghalaya border in 2006 (till November), reports *Press Trust of India*. 754 were handed over to police and 22 to the Bangladesh Rifles (BDR). According to BSF sources, most of the 754 Bangladeshi nationals handed over to the police were deported to the neighboring country after talks during the BSF-BDR flag meetings.



lar patrols, ambushes, etc. Pentagon has opined that Islamic fundamentalist groups after Sept. 9/11, terrorist attacks 'respect no borders, no boundaries and no state institutions'. The Bangladesh border is the longest land border that India shares with any of its neighbours. It covers a length of 4,095 kilometers abutting the States of West Bengal, Assam, Meghalaya, Mizoram and Tripura. Continual illegal migration from



Bangladesh has completely changed the demography of the borders in South Bengal. There are more than 100 villages located right on the zero line. Intelligence reports have been emphasizing that unauthorized immigration from across the border in northeastern peripheral villages needs to be checked for controlling escalation in terrorist attacks. A foolproof tool to differentiate between bonafide residents and illegal immigrants is

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The report added that smuggled goods worth over INR 8.5 crore, including forest produce valued at INR 2.4 crore, narcotics worth INR 70.9 lakh and cattle valued at INR 1.9 crore, were recovered from the Indo-Bangladesh border. The seizure included fake Indian currency worth INR 33,000, which were being pumped into the country through Bangladesh.

#### Border fencing

With a view to check and prevent cross border illegal migration, the Government of India

ordered fencing of borders along the Indo-Bangladesh borders. Details of the fencing work done so far are given in Tables 1 and 2.

A foolproof tool/technique to differentiate between genuine residents and infiltrators or unauthorized immigrants is the need of the hour. Fingerprint has been most authentic and reliable science for individualization or personal identification for over more than one century. Even prints of monozygotic twins are different, a fact which cannot be established even by DNA Profiling.

**Table 1 : Fencing work on Indo-Bangladesh Border (Phase-I)**

| Name of the State | Length of the border (in km.) | Sanctioned length of the fencing (in km.) | Work completed (in km.) | Expenditure incurred so far (Rs. in million) |
|-------------------|-------------------------------|---|-------------------------|--|
| West Bengal       | 2216.7                        | 507                                       | 505                     | 921.1  |
| Tripura           | 856                           | -   | -                       | -  |
| Assam             | 262                           | 152                                       | 149                     | 192.9  |
| Meghalaya         | 443                           | 198                                       | 198                     | 283.9  |
| Mizoram           | 318                           | -   | -                       | -  |

**Table 2 : Fencing work on Indo-Bangladesh Border (Phase-II)**

| Name of the State | Length of the border (in km.) | Sanctioned length of the fencing (in km.) | Estimated Expenditure far (Rs. in billion) | Expected year of completion |
|-------------------|-------------------------------|---|--|-----------------------------|
| West Bengal       | 2216.7                        | 1021                                      | 4.40                                       | 2006-07                     |
| Tripura           | 856                           | 736                                       | 2.13                                       | 2006-07                     |
| Assam             | 262                           | 71.5                                      | 0.25                                       | 2006-07                     |
| Meghalaya         | 443                           | 201                                       | 0.58                                       | 2006-07                     |
| Mizoram           | 318                           | 400*                                      | 1.11                                       | 2006-07                     |

\*Length is more due to topographical factors



## Rationale of the Study

India has suffered for the past more than two decades, from terrorism in Punjab, Jammu and Kashmir and in northeastern part of India. Countless innocent lives have been lost to the terrorist's ruthless violence.

The first step towards checking the menace of cross border terrorism would be to correctly identify and distinguish the miscreants from the local residents. There are many ways to do that, but their effectiveness is always questionable. Even DNA Analysis cannot be used as a foolproof technique to individualize. Live Fingerprint Scanning System can be used as an authentic and convenient means of recording and identifying fingerprints for the purpose of individualization. Database once created can be used for further reference. A 40 GB hard disk can store about ten thousand individual fingerprint images.

## Objectives of the Study

The followings are the objectives of the present study:

1. To identify a foolproof, and convenient tool/technology for distinguishing illegal immigrants from the genuine or bonafide residents of the bordering villages/areas.

2. To create electronic Fingerprint Database for immediate comparison and identification.

## Operational Definitions

*Violent Crimes* :<sup>11</sup> The following IPC crimes have been grouped as 'Violent Crimes' for the purpose of crime analysis in the study. These are:-

- (a) *Violent crimes affecting life*: Murder, attempt to murder, culpable homicide not amounting to murder, dowry deaths, and kidnapping & abduction.
- (b) *Violent Crimes affecting Property*: Dacoity, preparation and assembly for dacoity and robbery.
- (c) *Violent Crimes affecting Public Safety*: Riots and arson.
- (d) *Violent Crimes affecting Women*.
- (e) *Fingerprint* : It is the impression of papillary ridges on finger.<sup>12</sup>
- (f) *Illegal immigration*: Entry into the territory of a Nation.
- (g) *Live Fingerprint Scanning, Database, Personal Identification Number (PIN)*.

## Methodology

A ten-digit fingerprint slip stocked in fingerprint bureaux in

the need of the hour. Use of live fingerprint scanning can be applied as an authentic and most reliable scientific technique for individualization. Even prints of monozygotic twins are different, a fact which cannot be established even by DNA Profiling.

different parts or States of India carry rolled and plain impressions with a unique Personal Identification Number (PIN) or classification formula. The present method of using fingerprint record slip database is a technique for the identification of individuals. These slips can be created either by using 'printer's ink' or by recording fingerprint impressions by a 'live scanner'.

The creation of fingerprint database for comparison and identification of residents of a bordering village/town can be of vital importance in solving the problem of illegal immigrants, who instigate violence and sponsor terrorism initially in bordering areas and then to other parts of India.

Fingerprint has been most authentic and reliable science for individualization or personal identification, for the last more than 100 years. Creation of fingerprint database for comparison and identification at P.S. level can be of vital importance in solving the problem of illegal immigrants.

### **Futuristic Technology For Checking Illegal Immigration**

To control frequent incidents of illegal entry into India, through porous border, the Live Fingerprint Scanning Technology can be used. Live Fingerprint Scanner is a device which has the ability to enroll a live fingerprint of an individual or individuals. Live Fingerprint Scanning is a feature and a capability of the underlying biometric pattern analysis algorithm and much more desirable across scanners than simple scanner independence.

#### ***(i) Details of the Equipment***<sup>13</sup>

**Portable Live Fingerprint Workstation ('Live Scanner')** is an opto-electric device, which consists of a Laptop, a small scanner, and a web camera (optional). Entire system can be carried to anywhere in a small office

bag, and it also does not require electricity; it is operated by the inbuilt laptop battery.

It is very easy to make a highquality ten-print slip stably and fast. It is achieved by refusing from the traditional "ink" method of fingerprint taking but using up-to-date, effective technology of electronic non-ink fingerprinting.

#### **Advantages over traditional inking method**

- Troubling about purchasing service materials (printing ink, paper etc.)
- Troubling about training to take "ink" fingerprints skillfully.
- Charges for inevitable errors (smears and print distortion, rolling sequence and completeness errors.
- Then-and-there comparison and identification, does not require in-depth knowledge of fingerprint science by the user, only a few computer commands are to be remembered, moreover it does not require much of computer knowledge for the operator.

#### **Technical Specifications of the Equipment**

##### **Roll Finger Scanner :** (Opto-electronic Scanner)

Window size : 40 mm X 40 mm

Resolution : 512 Dpi

Image Mode : 256 Gray Scales

Scanning time : Less than 0.01 second/impression

Distortion : < 1%

##### **Hardware Engine :**

Intel Pentium-IV Architecture

40 GB Hard Drive

64 MB Video Memory

512 MB RDBMS RAM

Ethernet 3 Port

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Flat Screen Active Matrix LCD Monitor 15.1 inch  
High Resolution Digital Cam (Optional)

### 1. Power Requirements :

- 220 VAC (+/- 10%)
- 5 Amps, 50 Hz

### 2. Environmental Conditions :

- Operating Temperature : 0C-45C
- Humidity : 90 %, Non-Condensing, Condensing

### 3. Operating System :

- Microsoft Windows 2000/SP4

### 4. Scan Engine :

- IBioS-CJ VERSION .01 RELEAE 05

### 5. External Casing:

- Rugged Industrial Grade

### 6. Dimension of the Scanner:

- 177 X 150 mm

### *ii) Creation of Fingerprint Database using Live Scanner :*

Live scanner can be carried to the village to create fingerprint database of the residents. It can store fingerprints on 10-digit format or it can store desired top phalange of a finger. Ten thousand single digit impressions can be recorded on a laptop with 40 GB hard disc, the live scanner which is being used in the Central Finger Print Bureau has 40 GB storing space.

The impressions can be recorded on the live scanner simply by rolling the finger on the scanner window, which has a hygroscopic film coated on its surface to avoid slippage and also to provide a little moisture for clear prints. The technique is simple and good quality prints can be recorded after basic training and practice.

The 10-digit slips created electronically by using the live scanner can be stored by taking their prints; the hard copies may be stored for future reference. The technique of recording of inkless fingerprints is simple and policemen working at local police stations can be easily trained to utilize the system.

### Discussion

India has sought to emphasize at international fora that terrorism is a global menace to which democracies are particularly vulnerable. India has called for concerted global action to counter terrorism and to ensure the enactment of measures such as sanctions against states responsible for sponsoring terrorist acts across international borders.

Most illegal entries of individuals into India are through our porous borders. Fencing has certainly helped, to a great extent, in checking cross border immigration, but the menace of unauthorized entry has not been contained completely. The basic reason is that illegal entrants melt away into the local population residing in the bordering villages and town, which is facilitated by their similarity in appearance. The religious faith of the illegal immigrants also sometimes can be a factor, which goes in their favour, for finding acceptance amongst the locals. So, identification of all those who are not the bonafide or genuine citizens of India is the first and foremost step in arresting and taking legal action against them. Fingerprints have been used as a reliable tool for individual identification for over a century. Computerization of fingerprints is a step further in the modernization of forensic science; there are many biometric tools available for distinguishing individuals. Live Scanner is a portable fingerprint scanning system, which we would wish to suggest for then-and-there distinction

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of illegal immigrants from the bonafide residents of bordering areas in India.

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