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AI in Policing — From Reactive to Predictive Investigation

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AI in Policing — From Reactive to Predictive Investigation

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WHY IN NEWS

A **government policy paper on AI integration in law enforcement** has highlighted how **machine learning, CCTV analytics, and predictive algorithms** are transforming Indian policing from reactive crime response to **evidence-based, predictive investigation**. Pilot programmes are operational in **Delhi** (CCTV network with facial recognition) and **Hyderabad** (Hawk-Eye surveillance system and AI crime analytics). The policy paper calls for a **national legal framework** for AI-aided policing — balancing security effectiveness with **privacy rights** under the **Digital Personal Data Protection (DPDP) Act, 2023** and due process guarantees under Articles 20, 21, and 22 of the Constitution.

THE CASE FOR AI IN POLICING

India's Law Enforcement Challenges

CHALLENGE	SCALE
Police-to-population ratio	~145 per 1 lakh (vs. UN recommended 222)
FIR backlog	Millions of cases pending across states
Conviction rate	~40-50% in IPC cases (lower for serious crimes)
CCTV coverage	Major cities have extensive networks but limited analytics capacity
Detective capacity	Shortage of trained investigators; forensic lab backlogs

India's police forces are understaffed, underfunded, and overwhelmed — making AI augmentation a systemic necessity rather than a luxury.

What AI Can Do in Policing

APPLICATION	FUNCTION
Predictive crime mapping	ML algorithms analyse historical crime data to identify hotspots before crimes occur
Facial recognition	Match CCTV footage to criminal databases for suspect identification
Digital evidence management	AI-assisted processing of call records, financial transactions, social media
Automated FIR analysis	Pattern detection across FIRs to identify serial offenders/linked crimes
Traffic and crowd management	Real-time analytics for events, protests, disaster response
Cybercrime detection	Pattern recognition for financial fraud, phishing, and cyberstalking

CURRENT DEPLOYMENTS IN INDIA

Delhi — Integrated Command and Control Centre (ICCC)

Delhi Police operates an **ICCC** integrating:

- **~2 lakh CCTV cameras** (and expanding) across the city
- **Facial Recognition System (FRS)** — used for identifying suspects, missing persons, and tracking
- **AI-powered analytics** for real-time traffic management and crowd density monitoring

Delhi's FRS was controversially used during the **2020 Delhi riots** for retroactive suspect identification — raising civil liberties concerns.

Hyderabad — Hawk-Eye System

Hyderabad City Police's **Hawk-Eye** system:

- Integrates CCTV cameras across the city with centralised AI analytics
- Tracks vehicles via automatic number plate recognition (ANPR)
- Monitors crime hotspots in real-time
- Has a mobile application for beat officers to access real-time data

Hyderabad has also implemented **SHe Teams** — AI-assisted monitoring of public spaces for women's safety — integrated into the surveillance network.

Other States

STATE	AI/TECH INITIATIVE
Tamil Nadu	AI-powered traffic management; CCTNS (Crime and Criminal Tracking Network System)
Maharashtra	CCTNS integration; drone surveillance for law and order
Uttar Pradesh	Dial 112 AI dispatch system; CCTV network in Lucknow, Noida
Kerala	Janamaithri Suraksha Project with digital policing

National: CCTNS

The **Crime and Criminal Tracking Network System (CCTNS)** — a national initiative under Ministry of Home Affairs — digitises police records and FIRs across all police stations, creating a national database for AI analytics.

THE SHIFT: REACTIVE TO PREDICTIVE

Traditional (Reactive) Policing

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Crime occurs → FIR filed → Investigation begins → Arrest (if successful)
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- Resource-intensive
- Evidence-dependent
- High rates of cases going cold

AI-Augmented (Predictive) Policing

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Data analysis → Hotspot identification → Preventive deployment → Incident prevention
```

AND

```
Crime occurs → AI pattern matching → Suspect identification → Faster arrest
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Predictive Policing — How It Works

1. **Historical crime data ingestion** — location, time, type, recidivism
2. **Socioeconomic overlay** — unemployment, alcohol sales, weather patterns (controversial)
3. **Risk scoring** — areas and individuals flagged for elevated risk
4. **Resource allocation** — patrol deployment optimised to flagged areas

LEGAL AND ETHICAL CONCERNS

Privacy — DPDP Act 2023

The **Digital Personal Data Protection (DPDP) Act, 2023** — India's primary data protection law — has implications for AI policing:

DPDP PROVISION	POLICING IMPLICATION
Consent for data processing	Police processing biometric/CCTV data without explicit consent
Data localisation	Centralised AI databases must comply
Data minimisation	Broad surveillance collection may violate this principle
Right to erasure	Citizens can request deletion — complex for criminal records

Exemptions in DPDP Act: The Act explicitly exempts **national security** and **law enforcement** data processing from most consent requirements — giving police wide latitude.

Facial Recognition — The Accuracy Problem

Facial recognition systems have documented **bias** issues:

- **Higher error rates** for darker-skinned individuals, women, and elderly
- NIST (US) studies show some systems have **10-100x higher false positive rates** for Black vs. White faces
- In India, concerns about accuracy for Dalit, tribal, and minority communities
- A **false positive** in policing = wrongful arrest and detention

Algorithmic Bias in Predictive Policing

Predictive algorithms trained on historical crime data can **encode existing bias**:

- If certain communities are historically over-policed, their areas appear in crime data more often
- Algorithm flags these areas → more policing → more arrests → data reinforces the bias
- Creates a **feedback loop** that perpetuates discriminatory policing

Constitutional Rights

ARTICLE	RIGHT	AI POLICING RISK
Article 20	Protection against self-incrimination	Compelled biometric data
Article 21	Right to life and personal liberty	Pre-emptive detention based on algorithms
Article 22	Protection against arbitrary arrest	Arrests on algorithmic suspicion

The Supreme Court's **K.S. Puttaswamy v. Union of India (2017)** judgment established **Right to Privacy** as a Fundamental Right — directly applicable to mass surveillance systems.

THE ACCOUNTABILITY GAP

Current AI policing deployments in India operate **without a dedicated legal framework**:

1. **No requirement to disclose** when AI-generated intelligence was used for an arrest
2. **No audit mechanism** for algorithm accuracy or bias
3. **No independent oversight body** for law enforcement AI
4. **No right for suspects** to challenge AI-generated evidence in court

The **policy paper recommends:**

- A **Police AI Accountability Bill** — transparency in AI deployment
- **Algorithmic Impact Assessments** before deployment
- **Independent Ethics Committee** for law enforcement AI
- **Mandatory disclosure** when AI evidence is used in prosecution

INTERNATIONAL MODELS

COUNTRY	AI POLICING APPROACH
UK	Facial recognition pilots; Information Commissioner oversight; court challenges
EU	AI Act (2024) classifies real-time facial recognition in public as **high-risk**; strict conditions
USA	City-level bans (San Francisco, Boston) on facial recognition by police; federal regulation pending
China	Comprehensive AI surveillance; SCS (Social Credit System) integration

The EU's **AI Act (2024)** is the world's most comprehensive AI regulation — it prohibits **real-time biometric surveillance** in public spaces except for narrow security exceptions.

UPSC RELEVANCE

PAPER	ANGLE
GS3 — S&T	AI, machine learning, facial recognition, predictive analytics, surveillance technology
GS2 — Governance	Police reforms, CCTNS, MHA, law enforcement modernisation
GS2 — Polity	Articles 20, 21, 22; K.S. Puttaswamy judgment; privacy rights
GS4 — Ethics	Algorithmic bias, surveillance ethics, accountability in governance
Mains Keywords	Predictive policing, facial recognition, DPDP Act 2023, CCTNS, K.S. Puttaswamy, algorithmic bias, AI Act EU, surveillance

FACTS CORNER

- **India's police ratio:** ~145 per 1 lakh population (UN recommended: 222)
- **CCTNS:** Crime and Criminal Tracking Network System — national digital police records network; MHA
- **Delhi ICCC:** ~2 lakh CCTV cameras; Facial Recognition System (FRS) deployed
- **Hyderabad Hawk-Eye:** Integrated surveillance + ANPR + crime analytics
- **DPDP Act 2023:** India's data protection law; exempts national security and law enforcement from most consent requirements
- **K.S. Puttaswamy v. Union of India (2017):** SC 9-judge bench; Right to Privacy = Fundamental Right under Article 21
- **Facial recognition bias:** NIST studies show 10-100x higher false positive rates for darker-skinned individuals in some systems
- **EU AI Act (2024):** Classifies real-time biometric surveillance in public as high-risk; strict conditions apply
- **Predictive policing feedback loop:** Historical over-policing of communities → algorithm flags those communities → more policing → reinforced bias
- **Article 20:** Protection against self-incrimination; Article 21: Right to life and liberty; Article 22: Protection against arbitrary arrest

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