Finger Minutiae Record - Finger Image Record (FMR-FIR) Modality

For Prelims: **Aadhaar-enabled Payment System (AePS)**, Aadhar Lock, Silicone thumbs

For Mains: Vulnerabilities associated with the AePS, Challenges of using biometric authentication in financial transactions, Role of financial literacy and digital skills in preventing AePS frauds

Source: IE

Why in News?

Recently, the **Unique Identification Authority of India (UIDAI)** has rolled out an in-house **Artificial Intelligence/Machine Learning (AI/ML)** technology-based **Finger Minutiae Record – Finger Image Record (FMR-FIR) modality.**

- This technology, specifically designed to enhance **Aadhaar-enabled Payment System (AePS)** **transactions,** aims to tackle **fraudulent activities,** including the misuse of cloned fingerprints.

What is Finger Minutiae Record - Finger Image Record (FMR-FIR) Modality?

- **About:**
  - The **FMR-FIR modality** is an **advanced AI/ML-based technology** developed by the UIDAI to bolster security measures within the **Aadhaar-enabled Payment System (AePS).**
- **Key Features and Functionality:**
  - **Hybrid Authentication:**
    - FMR-FIR combines the analysis of two distinct components – **finger minutiae** and **finger image** – to establish the **authenticity of fingerprint biometrics during Aadhaar authentication**.
  - **Liveness Detection:**
    - The modality's primary function **lies in assessing the liveness of the captured fingerprint.**
    - It can differentiate between a **genuine, "live" finger and a cloned or fake fingerprint,** thereby preventing spoofing attempts.
  - **Real-time Verification:**
    - FMR-FIR operates in real-time, providing instant verification results during the authentication process.
  - **Robust Fraud Prevention:**
    - By detecting and deterring the use of cloned fingerprints, the technology significantly reduces the risk of AePS frauds.
- **Rationale and Implementation:**
  - **Addressing Emerging Threats:** The emergence of fraudulent activities involving cloned fingerprints necessitated the development of a sophisticated solution to safeguard AePS

transactions.

        - Payment-related frauds have surged in India, with **over 700,000 reported in FY21.**
        - The figures dramatically **escalated to nearly 20 million in FY23**, according to data from supervised entities of the **Reserve Bank of India (RBI)**.
        - While many cases go unreported due to limited awareness about cyber frauds, instances of financial frauds remain significant.
    - **Silicone-based Fraud:** Instances of unauthorized money transfers through **fake fingerprints created using silicone** prompted the need for a more secure and technologically advanced approach.
    - **Integration of AI/ML:** The integration of **artificial intelligence** and **machine learning technologies** enhances the accuracy and effectiveness of fingerprint authentication.
- **Advantages and Implications:**
    - UIDAI's FMR-FIR technology bolsters security, mitigates vulnerabilities, boosts transaction confidence, and exemplifies technological innovation for societal welfare.

What is the Unique Identification Authority of India?

- **Statutory Authority:** The UIDAI is a **statutory authority established** on 12th July 2016 by the Government of India under the jurisdiction of the Ministry of Electronics and Information Technology, following the provisions of the **Aadhaar Act 2016.**
    - The UIDAI was **initially set up by the Government of India in January 2009,** as an attached office under the aegis of the **Planning Commission**.
- **Mandate:** The UIDAI is **mandated to assign a 12-digit unique identification (UID)** number (Aadhaar) to all the residents of India.
    - As of 31st October 2021, **UIDAI had issued 131.68 crore Aadhaar numbers.**

What is AePS?

- The AePS is a bank-led model that allows **online interoperable financial transactions at Point of Sale (PoS) or micro-ATMs** through the **Business Correspondent (BC)** of any bank using the **Aadhaar authentication.**
- It was taken up by the **National Payments Corporation of India (NPCI)** - a joint initiative of the **Reserve Bank of India (RBI) and the Indian Banks' Association (IBA).**
- The AePS is meant to provide **easy and secure access to banking services** for the poor and marginalized sections of society, especially in rural and remote areas.
- It **eliminates the need for OTPs, bank account details,** and other financial information.
- Transactions can be carried out with only the **bank name, Aadhaar number, and captured fingerprint during Aadhaar enrollment.**

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q1. In India, under cyber insurance for individuals, which of the following benefits are generally covered, in addition to payment for the loss of funds and other benefits? (2020)

1. Cost of restoration of the computer system in case of malware disrupting access to one's computer
2. Cost of a new computer if some miscreant wilfully damages it, if proved so
3. Cost of hiring a specialised consultant to minimise the loss in case of cyber extortion
4. Cost of defence in the Court of Law if any third party files a suit

Select the correct answer using the code given below:

(a) 1, 2 and 4 only

(b) 1, 3 and 4 only
(c) 2 and 3 only
(d) 1, 2, 3 and 4

Ans: (b)

Q2. In India, it is legally mandatory for which of the following to report on cyber security incidents? (2017)

1. Service providers
2. Data centres
3. Body corporate

Select the correct answer using the code given below:

(a) 1 only
(b) 1 and 2 only
(c) 3 only
(d) 1, 2 and 3

Ans: (d)

Q3. Consider the following statements: (2018)

1. Aadhaar card can be used as a proof of citizenship or domicile.
2. Once issued, Aadhaar number cannot be deactivated or omitted by the Issuing Authority.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans: (d)

Mains

Q. What are the different elements of cyber security ? Keeping in view the challenges in cyber security, examine the extent to which India has successfully developed a comprehensive National Cyber Security Strategy. **(2022)**

PDF Refernece URL: https://www.drishtiias.com/printpdf/finger-minutiae-record-finger-image-record-fmr-fir-modality