

SIMBA- Software to identify Asiatic lions

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In news- Recently, the Gujarat forest department has developed SIMBA, an AI based software for identification management and conservation of Asiatic lions.

About SIMBA-

- **SIMBA or Software with Intelligent Marking Based identification of Asiatic lions** is a photo-identification software, specifically designed to distinguish patterns or marks.
- The software has been **developed by Hyderabad-based “teliolabs”**.
- The software is trained with sufficient training data and is able to isolate the region of interest (ROI) and separate them for further identification.
- It would be used to create a library of data on the Asiatic lions.
- It can be used to create a database with a unique identification number/ name.
- Asiatic lions have unique whisker spots on either side of their muzzle.
- According to scientific studies, these precise patterns are highly variable and do not change over time.
- **SIMBA works with a deep machine learning technique that matches a point-pattern for pairwise comparisons** that automates the individual identification, based on the variability in the individual’s whisker spot pattern, the presence of scars on the face, notches on the ears, and other metadata of the photograph.
- It also **extracts the uniqueness from the photograph** and can cluster similar patterns or marks within the embedding space of the machine learning.

- **It allows the user to identify and search** whether the individual already exists in the database or is a new inventory.
- Additional information like gender (male/female), name, microchip number, life-status (dead/alive), lactating (in case of female) can also be used to filter the individual from the database.
- **It has a user-friendly graphical interface** that helps to understand the available database easily.

Asiatic lions (*Panthera leo persica*)–

- Asiatic lions are endemic to the Gir landscape of Gujarat.
- It is one of the 21 critically endangered species identified by the Union Environment Ministry for taking up recovery programmes.
- They are **slightly smaller than African lions** and have unique whisker spot patterns.
- The most striking morphological character, which is always seen in Asiatic lions, and rarely in African lions, is a longitudinal fold of skin running along its belly.
- The fur ranges in colour from ruddy tawny, heavily speckled with black, to sandy or buff-grey, sometimes with a silvery sheen in certain lights.
- The number of Asiatic lions, who live primarily in the Gir forests, was estimated to be 674 in 2020, an increase of 29 per cent in five years.
- They **are also accorded the highest degree of protection** and are listed in **Schedule-I** of Wildlife (Protection) Act, 1972.