ARTIFICIAL INTELLIGENCE SYNOPSIS

FINGERPRINT RECOGNITION SYSTEM

UCS411 -Artificial Intelligence

Fourth – Semester

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Description:

Fingerprint recognition is a type of biometric technology that uses artificial intelligence to identify individuals based on their unique fingerprints. Although fingerprint recognition has become a popular and efficient security technology, most fingerprint recognition systems are vulnerable to hacking and other security breaches

Biometric matching is promising, with new types of scanners, software, and AI being developed to enhance security systems.

Language Used:

Python

Prerequisites:

- OpenCV library.
- OS Library.
- Fingerprint Dataset.

Implementation:

The program uses the following algorithms:

1. SIFT (Scale-Invariant Feature Transform): This algorithm is used for detecting and computing key points and descriptors in the fingerprint images.
2. FlannBasedMatcher: This algorithm is used for matching the descriptors of the key points in the sample fingerprint image with the descriptors of the key points in the other fingerprint images.
3. K-Nearest Neighbours (KNN): This algorithm is used by FlannBasedMatcher to find the k nearest matches to each descriptor in the sample fingerprint image.

Output:

For Fingerprint Recognition, the program terminates after displaying the appropriate message and image. In the case where a matching fingerprint is found, it also displays a re sized image of the matched fingerprint with the matching key points marked using the SIFT algorithm. The program terminates only after the user presses any key.