PROJECT - TITLTE :- FINGER MATCHING

Introduction :-

- ➢ Finger matching is a biometric technique used for identifying and verifying individuals based on the unique patterns present in their finger. Each person's finger are distinct, characterized by unique ridges, valleys, and minutiae points, making them a reliable means of personal identification.

- ➢ Finger matching had been used by the law administration for security purpose. The technology now a days has develop a new approaches in correspond to the identity management as well as access control regarding the finger identification.

Problem Statement :-

- ➢ Feature extraction of finger is a critical stage of a finger matching system. In this work, author will investigate a finger matching system that fused two feature extraction techniques, namely Gray-Level Co-occurrence Matrices (GLCM) as well as Discrete Wavelet Transform (DWT). The extracted features of trained images are to be fed into support vector machine for recognition process. The final stage is to evaluate the performance of the system measured in terms of correct detection. Then the system will be optimized with the rejection rate.

Objectives :-

- ➢ The main objective for this particular project is to develop a finger matchig system based on :-

- ♦ To be finger matching using minutiae details.
- ♦ To be finger matching using image correlation.
- ♦ To be finger matching using texture Analysis.

Scopes and Limitations :-

- ➢ The Scope of study for the project entitled "Finger matching using Gray Level Co - Occurrence Matrices and Discrete Wavelet Transform" are as followed :-

- ♦ Understanding the concept of Gray-Level Co-occurrence Matrices (GLCM) technique.
- ♦ Understanding the concept of Discrete Wavelet Transform (DWT) technique.
- ♦ Understanding the application of the MATLAB.
- ♦ Applying GLCM and DWT techniques with MATLAB.
- ♦ Analysing finger database by using MATLAB with GLCM and DWT techniques.
- ♦ Apply and optimising the finger matching with correct detection technique and rejection rate technique.
- ♦ Low-quality, smudged, or partial fingerprints can reduce matching accuracy.

- ♦ Handling large databases efficiently can be challenging and may require significant computational resources.
- ♦ Dirt, dust, and moisture can interfere with the scanning process.

Methodology :-

i. Requirement Identification :-
- ♦ Examination of prevalent finger matching algorithms (e.g., Minutiae-based, Ridge feature-based, Correlation-based).
- ♦ Analysis of currently available finger matching software and hardware.
- ♦ Identification of the strengths of existing systems (e.g., accuracy, speed, large database handling).
- ♦ Gathering user feedback and experiences with existing systems.
- ♦ Investigation of emerging technologies and innovations in finger matching.
- ♦ Capture and store finger in a database.
- ♦ Ability to handle a large number of fingerprints in the database.

ii. Feasibility of Study :-
- ♦ The research of finger matching has been done previously in UTP by the students and lecturers.
- ♦ The software for testing the method is available to carry out the project.
- ♦ Improvement of one of the previous final year project regarding GLCM and DWT methods.
- ♦ Estimation of initial costs for hardware, software, and infrastructure setup.

Iii Tool :-
- → **MATLAB**