Ministry of Higher Education and

Scientific Research

University of Babylon

College of Information

Technology

Department of Information

Fingerprint Identification using Scale-Invariant Feature Transform technique

A Graduate Project Submitted to the department of Information Security of the College of Information Technology, University of Babylon, in Partial Fulfillment of the Requirements for the Bachelor's degree in the Information Security of Information Technology.

By

Baqer mohammed shabib

Supervised b
Prof. Dr. Eman Alshamery

2023-2024

1

Abstract

Simply put, fingerprints are essential for effective identity verification, as they provide a high level of security thanks to the uniqueness of each fingerprint. It is considered important in multiple areas such as security, comfort, and maintaining privacy.

The goal of using fingerprints is to accurately establish identification and provide a secure and efficient means of accessing systems and information. This is achieved through the use of advanced technology such as SIFT (Scale-Invariant Feature Transform) features and computer image analysis to extract and match features between fingerprints.

certainly! The program analyzes fingerprint images using OpenCV and SIFT features to extract and match features between images. Data is loaded, images are processed, features are extracted, accuracy is measured, and the results are displayed.

This program implements a fingerprint matching algorithm using SIFT (Scale-Invariant Feature Transform) features. It is divided into several stages. Images and usernames are loaded from the selected files. The uploaded images are processed using Gaussian Blur technology to reduce noise. Canny edge detection technology is used here to extract the edges of the image, and Harris corners technology is used to extract distinct corners. Features are extracted using a SIFT parser to detect and describe key points for each image. The matching accuracy between images is measured and searches for the closest similar image to the model image using a number of keypoints and a matching distance.