
Exploring the Efficacy of Ear Images for Biometric Identification

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1 Problem Description

In recent years, there has been a growing need for dependable biometric identification systems. Although ear images have been proposed as a promising biometric identifier, their effectiveness remains uncertain. The aim of this project is to investigate the use of ear images as a biometric identifier, in order to determine their potential as a reliable biometric identification system.

2 Plan to Solve

To determine the efficacy of ear images for biometric identification, this project will employ a combination of machine learning and deep learning techniques. Specifically, we will explore the potential of Convolutional Neural Networks (CNNs) and Deep Neural Networks (DNNs) in developing a biometric identification system using ear images. Additionally, we will evaluate the performance of existing ear identification algorithms and processes.

3 Related Papers

We will conduct a comprehensive review and analysis of existing literature on biometric identification systems that use ear images. Our sources will include "A deep learning approach for person identification using ear biometrics" by Ramar Ahila Priyadharshini, Selvaraj Arivazhagan, Madakannu Arun et al. (2020, Oct) and "Ear Detection and Localization with Convolutional Neural Networks in Natural Images and Videos" by William Raveane, Pedro Galdámez, and María Arrieta (2019, July).

4 Datasets Used

The dataset used will be Mathematical Analysis of Images Ear Database [↗](#), Annotated Web Ears Dataset [↗](#) and EarVN1.0 [↗](#)

5 Computing Resources we need for our project

To carry out this project, we require access to a cloud-based computing platform with GPU capability. We have identified two suitable options for our computing needs: the Google Colaboratory platform and the CCR platform.

6 Metric we expect to achieve

We expect to be able to create a biometric identification system based on ear images with an accuracy of at least 90%. We plan to use a combination of machine learning and deep learning techniques to achieve this accuracy.