

VISA Multimodal Biometrics Database

The VISA database is a unique multimodal dataset that captures face and iris data from the same individual (avoids the fusion of face and iris traits from different datasets). In VISA database correlation between face and iris images is maintained by acquiring face and iris from the same person. The VISA database is developed using simple image acquisition setup and devices to acquire biometric features of an individual in uncontrolled scenarios. The VISA dataset is composed of color face images and iris images collected from 100 subjects in the age group 10 to 90 years. The VISA dataset samples were acquired both in indoor and outdoor environments. The face images are obtained using different cameras and different situations like birthday celebration, presentation, marriage, photo sessions and festival celebrations etc. As a result the samples exhibit non-uniform illumination changes, reflection, shadow, occlusion, expression and pose variations. Similarly iris images are obtained in different sessions and locations, which results in illumination and reflection variations in eye images. The eye image may also contain occlusion like eyelashes, and eyelids and different iris alignment in eye images (due to eye movement). The statistics of VISA database is summarized in Table 1. Gender and age distributions of VISA database are illustrated in Figure 1.

Table 1: Statistics of VISA database

Parameter	VISA Database 100 subjects
Gender distribution	Male: 65%, Female:35%
Age distribution	10-25: 48% 26-40: 24% 41-55: 15% >=56: 13%

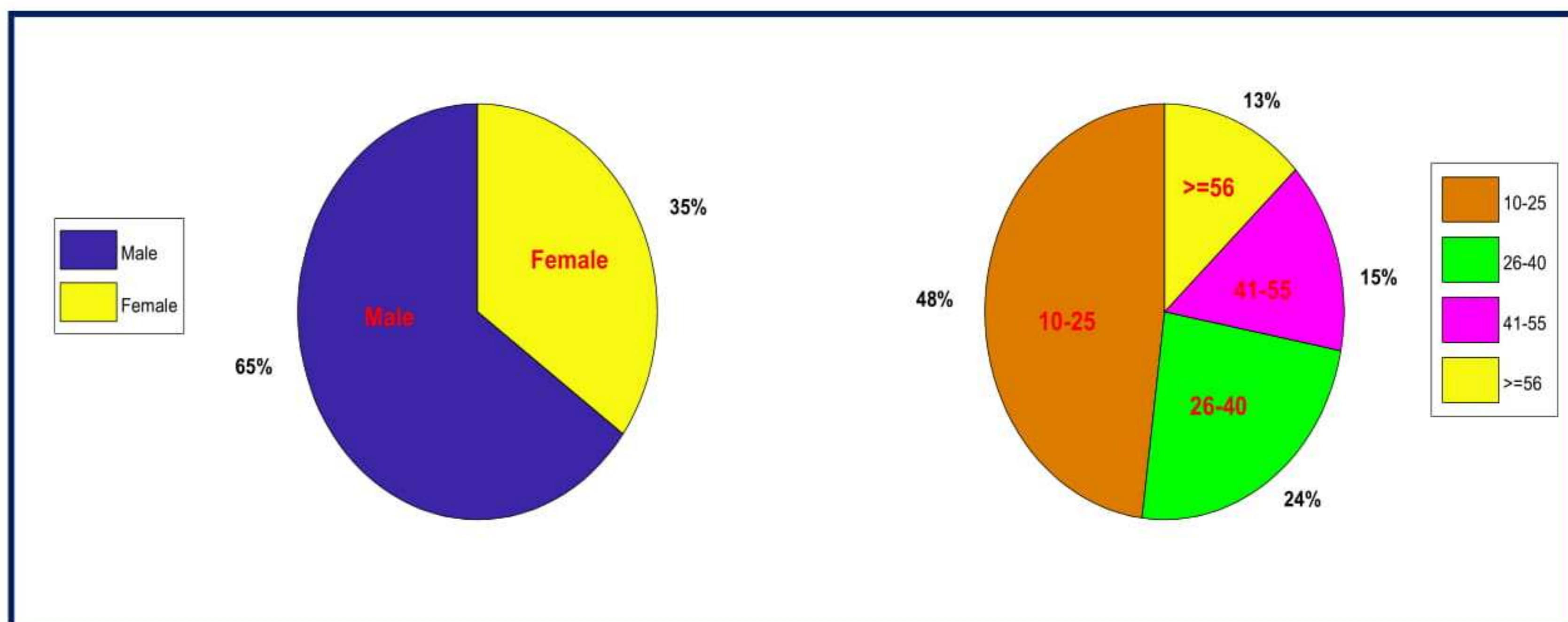


Figure 1: Statistics of VISA database

Storage structure of VISA database

The VISA database is stored as jpg (VISA Face images) and bmp (VISA Iris images) files using directory/folder structure as shown in Figure 2 and storage details of VISA database are recorded in Table 2. In Figure 2, intermediate nodes represent folder names and leaf nodes indicate associated files. The folder name of each subject is named sxxxx (xxxx is the unique subject id). The metadata associated with each subject describes the subject id, gender, age, year of acquisition, image sequence number. In the VISA face database each image name has five parts, which are separated by underscore. In the image file name first five characters indicates subject id (part 1), single character in part 2 represents gender (M: Male, F: Female), next two characters denote age of a subject (part 3) and following four characters represent year of acquisition (part 4) and last three character indicate image sequence number (part 5). Such image filename can be used to obtain the metadata. For example, the subject file name is named as S0010_M_25_2017_001.jpg, where S0010 indicates image belongs to subject 10, M denotes subject gender is male, 25 indicates subject was 25 years old, 2017 represent photo was taken in 2017 and 001 indicates image sequence number. The fields of the metadata of VISA Face dataset are described in Table 2.

Similarly, in VISA Iris database subjects are distributed in a particular folder structure and are named as sxxxx (xxxx is the unique subject id). The left and right eye images of each subject are stored in two separate folders and are named as L and R respectively. In the dataset each eye image is associated with a metadata. The file name of eye image is denoted by four parts and are separated by underscore. In the file name, first five characters indicate subject id (part 1), following single character represent gender either M (for male) or F(for Female) (part 2), next character denotes its right or left eye image (part 3) and last three characters represent image sequence number(part 4). Example: suppose the subject eye file name is named as S0001_F_L_001.bmp. In the file name, S0001 indicate image belongs to subject 1, F denote subject gender is female, L represent left eye image and 001 indicate subject image sequence number.

Table 2: Storage details of VISA database

Attribute	File extension	Type of image	File length	Number of images	Average file size	Database size
Database						
VISA Face	.JPEG	Color	19 characters	1805	1.46 MB	2.29 GB
VISA Iris	.bmp	Gray scale	13 characters	3501	300 KB	1.01 GB

Quality Protocols

In order to maintain the quality of face and iris biometric samples of VISA database, the traits are collected with the utmost care and diligence (except selfie face photos). The following are the quality protocols that were adapted from the BioSec database (Fierrez et al, 2007) and MMU GASPF (Gait-Speech-Face)(Chiung Ching Ho,2013).

If the number of samples of either face or iris biometric is less than ten, then the subject is excluded.

If face or iris biometric trait of a subject is not available then such subject was removed from the VISA database.

In face acquisition, the subject pose should be frontal or near frontal (looking straight into the mobile phone). The head pose (view) of subject was defined relative to the use of mobile devices i.e. the acquired images include both frontal and near-frontal images. The face images which are collected from subjects are manually validated.

When users take photos by themselves (selfie), the location of illuminators and the uncontrolled conditions may lead to non-uniform illumination on face images. To make acquisition process more realistic, the VISA Face images are obtained from indoor and outdoor conditions at different sessions (morning, afternoon and night). Due to difference in lighting, reflection and shadow, the new database face images are more varied in terms of illumination variations.

Purpose: The VISA Multimodal Biometrics Database is meant to be used for research purposes and shall not be used nor included in commercial applications in any form (e.g., original files, encrypted files, files containing extracted features, etc).

Citation: All documents and papers that use the VISA Multimodal Biometrics Database must acknowledge the use of the database by including the following reference.

Shanmukhappa A. Angadi and Vishwanath C. Kagawade,2018,“Face and Iris Wavelet Feature Fusion through Canonical Correlation Analysis for Person Identification”, Third International Conference on Electrical, Electronics, Communication, Computer Technologies and Optimization Techniques (ICEECCOT),14-15th December 2018, Mysore,IEEE. DOI: 10.1109/ICEECCOT43722.2018.9001636

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