



CLEAR SIGHT



Glaucoma Detection using deep learning

DATASET

ORIGA DATASET

FUNDUS IMAGE DATASET

RIM ONE DL IMAGE DATASET

Augmentations applied:

- **Gamma Correction**
- **HorizontalFlip**
- **Vertical Flip**
- **Combined Horizontal and vertical Flip**

Customized CNN

Convolutional Layers:

- Total number of convolutional layers: 5
 - There are 5 Conv2D layers, each followed by BatchNormalization, ReLU, and MaxPooling2D.

Fully Connected Layers:

- Total number of fully connected layers: 2
 - There are 2 Dense layers, one with 128 neurons and one with 64 neurons, each followed by ReLU activation.

Output Layer:

- 1 output layer: A Dense layer with 1 neuron and a sigmoid activation function.

ACCURACY: 86%

Model used by us: VGG 16

ACCURACY:91% :

1. Libraries and Tools:

- TensorFlow (Deep learning with VGG16).
- OpenCV (Image preprocessing).
- NumPy (Numerical operations).
- Scikit-learn (Dataset splitting).
- Google Colab Drive (Dataset and model storage).

2. Dataset Management:

- Images categorized as Non-Glaucomous (0) and Glaucomous (1).
- Images resized to 224x224 and normalized.

3. Dataset Splitting:

- Training (80%), Validation (10%), Test (10%).

4. Model Architecture:

- Base: Pre-trained VGG16 on ImageNet.
- Added Layers: Global Average Pooling, Dense (256 neurons), Dropout (0.5), and Sigmoid output.
- Loss: Binary Crossentropy.
- Optimizer: Adam (learning rate = $1e-4$).

5. Training Details:

- Input Shape: (224, 224, 3).
- Epochs: 16.
- Batch Size: 8.

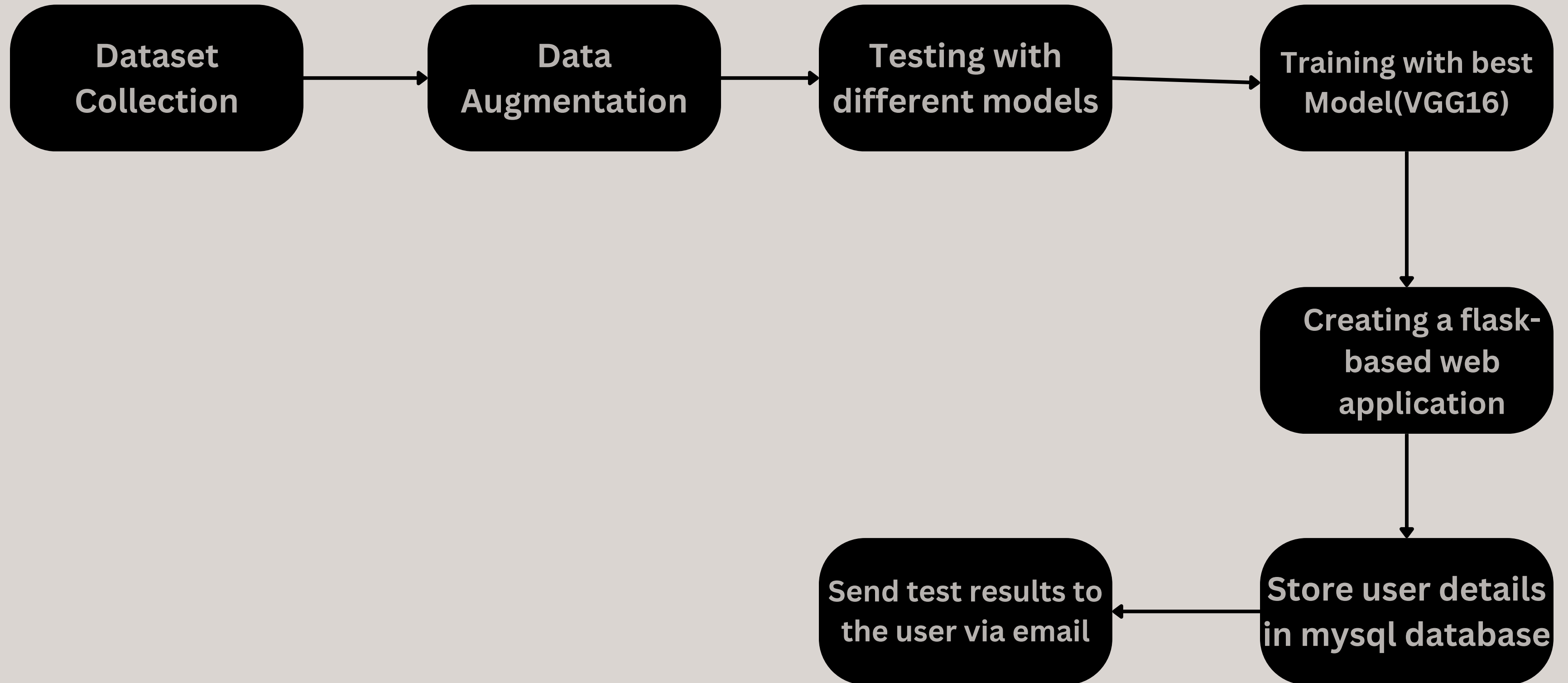
6. Model Saving:

- Formats: TensorFlow (.h5) and Pickle (.pkl).

7. GPU Utilization:

- GPU used for faster training.

WorkFlow:



Thank You