Federated Learning for Eye Disease Prediction - Execution Guide

Step 1: Start Environment

1.Start WAMP Server:

2.Launch WAMP Server

3.Ensure services are running (Apache and MySQL)

4.Start PyCharm: Open the project ,ensure all libraries are installed (e.g., flask, flask_mail, tensorflow)

5.Run Backend Server:

a.Use terminal: python app.py

b.Flask runs on http://127.0.0.1:5000/

Step 2: Login/Registration Flow

i. New users can register by visiting /user_register, filling in their details, and verifying the OTP sent to their email.
ii. After registration, users can log in through /user_login using their email and password.
iii. Doctors must register at /doctor_register by providing their profile information and verifying their email via OTP.
iv. Registered doctors can log in through the /doctor_login page.
v. Admins or owners use /owner_login to access the dashboard for model uploads and system management.

Step 3: Model Upload (Admin)

i.Admin uploads trained CNN/Federated model.

ii.ECC encryption applied before storage.

iii.Model becomes available for prediction.

Step 4: OTP Verification

i.OTP sent via email using flask_mail.

ii.SMTP credentials must be set in config.py (e.g., Gmail).

Iii.Access granted after successful OTP entry.

Step 5: Image Upload for Prediction

i.User uploads eye image (retinal).

ii.Model decrypts using ECC.

iii.CNN predicts disease type with feature extraction.

Step 6: Medical Info & Drug Assignment (Doctor)

i. System displays prediction to doctor.

ii. Doctor assigns disease diagnosis, medication, and notes.

iii. Data stored in WAMP (MySQL).

Step 7: Eye Disease Output Types

i. Diabetic Retinopathy (DR) – Blood vessel damage in retina.
ii. Glaucoma – Optic nerve damage from pressure.
iii. Age-related Macular Degeneration (AMD) – Central vision loss.
iv. Cataract – Lens clouding.
v. Normal – No disease.

Step 8:Final Output for User

i. Prediction result shown: e Diabetic Retinopathy.
ii. Confidence score displayed (e.g., 92%).
iii. Doctor's prescription and comments shown.