

# Federated Learning for Eye Disease Prediction - Execution Guide

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## 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.