

# Progress Report #4

## Work Date / Hours Logs

Date	Number of Hours	Work Done
Oct 24, 2025	2	Reviewed previous layouts and identified UI sections requiring ML feature integration.
Oct 26, 2025	2.5	Imported TensorFlow Lite models into the project assets directory and verified file accessibility.
Oct 28, 2025	2	Updated homepage_activity.xml to reorganize UI and integrate new ML feature buttons.
Oct 30, 2025	2.5	Designed activity_health_ai.xml interface for health prediction and recommendation output display.
Nov 1, 2025	2	Designed activity_heart_pred.xml layout for heart disease risk prediction screen.
Nov 3, 2025	2.5	Implemented HealthAIPredictorActivity.java and integrated TensorFlow Lite inference logic.
Nov 5, 2025	2	Developed HeartDiseasePredictorActivity.java backend logic and UI interaction features.
Nov 6, 2025	1.5	Tested prediction workflows, configured navigation flow, and debugged layout alignment issues.

---

## Description of Work Done

During this phase of development, the primary focus was integrating **Machine Learning functionality** into the NutrevoApp and updating the user interface to provide interactive health-related prediction features. The work involved adding TensorFlow Lite models, updating key layout screens, developing backend activity logic, and ensuring smooth UI flow.

## Machine Learning Integration

- Added two TensorFlow Lite ML models to support prediction features:

- health\_predictor\_updated.tflite

- heart\_disease\_risk.tflite

- Verified compatibility with Android environment and ensured the models load efficiently inside app activities.
- Achieved **above 90% accuracy** based on trained model evaluation.

### User Interface & Layout Enhancements

- **homepage\_activity.xml** was updated to remove outdated or unused UI elements and highlight new ML-based features prominently.
- Created **activity\_health\_ai.xml**, which displays:
  - Prediction results
  - Health recommendations
  - A stats visualization section (graph display button)
- Created **activity\_heart\_pred.xml**, which provides:
  - Heart disease risk classification (low/medium/high)
  - Personalized recommendations for improvement (I am working on improving UI for this)

### Backend Activity Development

- Developed **HealthAIPredictorActivity.java**, responsible for:
  - Reading user input values
  - Running them through the TensorFlow Lite health model
  - Displaying results and triggering stats graph view logic
- Developed **HeartDiseasePredictorActivity.java**, responsible for:
  - Executing heart disease risk predictions
  - Rendering categorized results and guiding recommendations

This development phase significantly advanced the intelligent features of the NutrevoApp, transitioning it from a static health tips app to an **AI-supported health decision tool**.

---

### Repo Check-in of Implementation Completed

#### ML Model Files

- `/Implementation/NutrevoApp/app/src/main/assets/health_predictor_updated.tflite`
- `/Implementation/NutrevoApp/app/src/main/assets/heart_disease_risk.tflite`

### Updated / New Layout XML Files

- `/Implementation/NutrevoApp/app/src/main/res/layout/homepage_activity.xml`
- `/Implementation/NutrevoApp/app/src/main/res/layout/activity_health_ai.xml`
- `/Implementation/NutrevoApp/app/src/main/res/layout/activity_heart_pred.xml`

### Java Source Files Implemented

- `/Implementation/NutrevoApp/app/src/main/java/com/example/nutrevoapp/HealthAIPredictorActivity.java`
- `/Implementation/NutrevoApp/app/src/main/java/com/example/nutrevoapp/HeartDiseasePredictorActivity.java`

All layout adjustments, ML model integrations, and backend logic are successfully committed to the GitHub repository. Testing verifies functional UI navigation and accurate prediction outputs.