RadiantClariX - AI X-Ray Analysis Application

User Manual & Documentation

Version: 1.0.0
Release Date: October 2025
Last Updated: October 30, 2025

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Introduction

RadiantClariX is an advanced AI-powered medical imaging application that analyzes X-ray images and provides detailed diagnostic reports. The app uses machine learning models to detect abnormalities in chest X-rays and identify bone fractures with high accuracy.

Perfect for:

- Healthcare professionals seeking quick preliminary analysis

- Medical students learning radiology

- Clinics needing AI-assisted diagnostics

- Research and educational purposes

Key Features

Dual AI Models:

1. Chest X-Ray Analyzer - Generates detailed textual descriptions of chest X-ray images. Describes visible anatomical features, abnormalities, and medical devices. Provides both technical medical terminology and plain language explanations. Uses BLIP AI technology for image captioning

2. Bone Fracture Detector - Identifies seven bone injury types with bounding boxes and confidence scores. Detects 7 types of bone injuries:

User-Friendly Interface:

- Dark & Light Theme

- Easy Image Upload

- Real-time Analysis

- Scan History

- PDF Export

Secure & Private:

- Authentication system

- Encrypted data storage

- Option to delete accounts and data

How to Start the Application

Step 1: Start the Backend Services

1. Open Project file in VSCode or in any other IDE

2. Navigate to the backend folder:

   cd D:\xray-app\radiantclarix\backend

3. Type ".**\start-all-services.ps1**" and hit ENTER.

Step 2: Start the Frontend App

1. Open Project file in VSCode or in any other IDE

2. Navigate to app folder:

   cd D:\xray-app\radiantclarix

3. Type: "**npm start**" and hit ENTER

Step 3: Open the App

Use Expo Go on mobile or emulator/web browser.

User Guide

Registration & Login:

- Register or Login using email and password.

Dashboard:

- Upload & Analyze, View History, Settings, Logout.

Upload & Analyze:

- Select model (Chest/Bone)

- Enter patient name

- Upload image (camera or gallery)

- Analysis starts automatically.

Understanding Results:

- Technical Report (for professionals)

- Plain Language Report (for patients)

- Generate PDF, Start New Scan, View Annotated Image.

Scan History:

- Full record of all scans with reports and dates.

Settings Page:

- Account Info, Theme, Change Password, Delete History, Delete Account, Logout.

Troubleshooting

App Won't Start:

- Ensure backend services are running.

- Restart both backend and frontend.

Login Issues:

- Check credentials and internet connection.

Upload Issues:

- Grant permissions, restart app, ensure models running.

History Not Updating:

- Refresh or restart app.

Performance:

- Restart backend, use smaller images, clear cache.

Technical Specifications

System Requirements:

Backend - Windows 10/11, Python 3.8+, Node.js 14+, 8GB RAM, 5GB disk.

Frontend - Android/iOS device with Expo Go or browser.

Ports Used:

5000 - Backend

8502 - Chest X-Ray AI Model

8503 - Bone Fracture Model

8081 - Expo Dev Server

Privacy & Security

Data Protection:

- Passwords encrypted and hashed

- MongoDB secure storage

User Rights:

- View, delete, or export data anytime.

Recommendations:

- Use strong passwords

- Logout on shared devices

- Backup reports regularly

Support

Q: Is this suitable for medical diagnosis?

A: No, use for preliminary analysis only.

Q: Offline mode?

A: Internet required.

Q: How many scans can I store?

A: Unlimited. Reports will be available for 15 days only from the time they are generated.

Q: Can I share reports?

A: Yes, via PDF export.

Q: Data privacy?

A: Fully private and user-only access.

Important Disclaimers

Medical Disclaimer:

- Educational use only.

- Do not replace professional diagnosis.

- Consult professionals for treatment.

Accuracy Notice:

- AI confidence scores vary.

- False positives/negatives possible.

- Models updated regularly for improved accuracy.

About the AI Models

Chest X-Ray Model:

- BLIP (Bootstrapping Language-Image Pretraining)

- Detects lung/heart issues, medical devices.

Bone Fracture Model:

- Faster R-CNN with ResNet-50 backbone

- Detects seven fracture types with bounding boxes and confidence scores.

Version Information

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Thank you for using RadiantClariX.
For technical support, contact your system administrator.