5. Frontend/Interface

The **Frontend/Interface** provides a secure, intuitive web-based dashboard for clinicians to interact with the AI-Assisted Diagnostic Reporting Support system. It enables upload of anonymised images, real-time visualization of AI highlights (heatmaps/attention maps), side-by-side viewing, and structured editing/approval of draft reports. The design prioritizes usability, accessibility (WCAG 2.1 AA compliance), and strict human-in-the-loop enforcement to align with UK clinical governance and MHRA human factors guidance.

Implementation resides in /frontend/ – recommended framework: **Streamlit** (for rapid prototyping and ease of deployment in secure environments) or **Flask/FastAPI + React** (for more customizable, production-grade UI). Integration with backend via secure API calls.

Key Features and Layout

- **Upload Section**: Secure file upload (DICOM/NIfTI) with validation and progress feedback.

- **Image Viewer**: Interactive DICOM viewer (using libraries like Cornerstone.js or OHIF viewer integration) with zoom, pan, windowing.

- **AI Highlights Overlay**: Toggleable heatmap/attention map from ViT analysis.

- **Report Editor**: Structured sections (Technique, Findings, Impression) with AI draft pre-filled, syntax highlighting, and mandatory "AI-Assisted" watermark.

- **Approval Workflow**: Edit → Review changes → Explicit "Approve & Sign" button (logs clinician ID/timestamp).

- **Additional**: Audit log view, session timeout, role-based access.

Example Screenshots and Demo Visuals

(High-fidelity example of integrated AI radiology interface.)
U"AI" Testing: User Interface and Usability Testing of a Chest X ...
Suggested filename: fig36-side-by-side-heatmap-report-editor.pdf
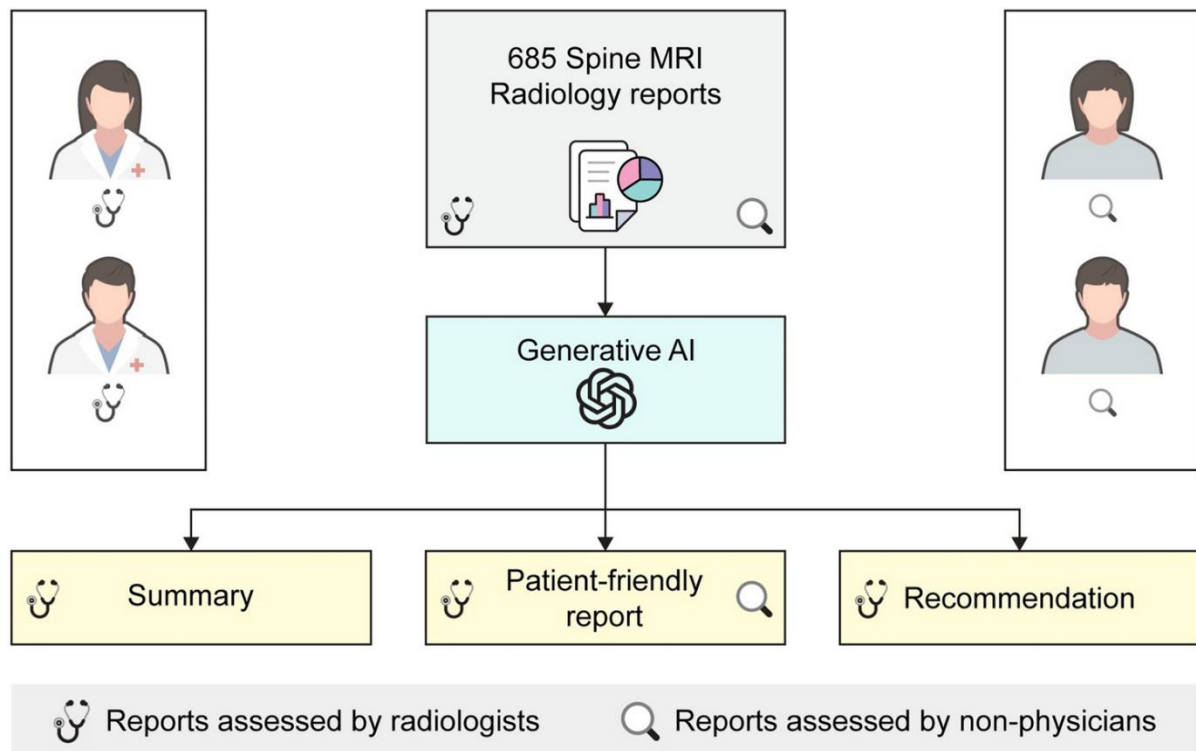Automation Bias in Mammography: The Impact of Artificial ...
From image to report: Fully AI-generated radiology reports using ...
Suggested filename: fig38-multimodal-report-dashboard.pdf

ProstateCancer.ai user interface. Training and artificial ...

Figure 40: Advanced radiology AI workflow demo with upload, analysis, and approval steps

Patient-centered radiology reports with generative artificial ...

Suggested filename: fig40-patient-centered-workflow.pdf

Figure 41: Integrated AI reporting tool clinician view with image overlay and structured editing
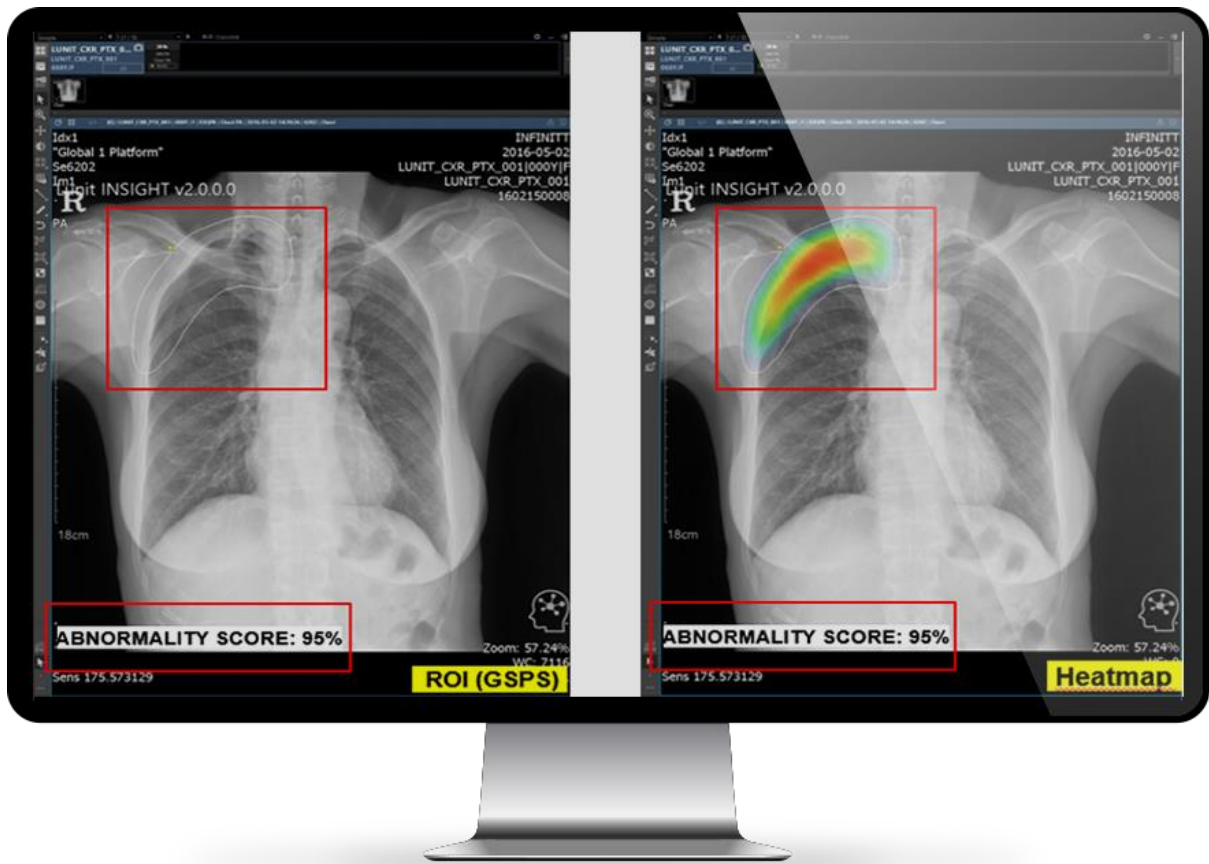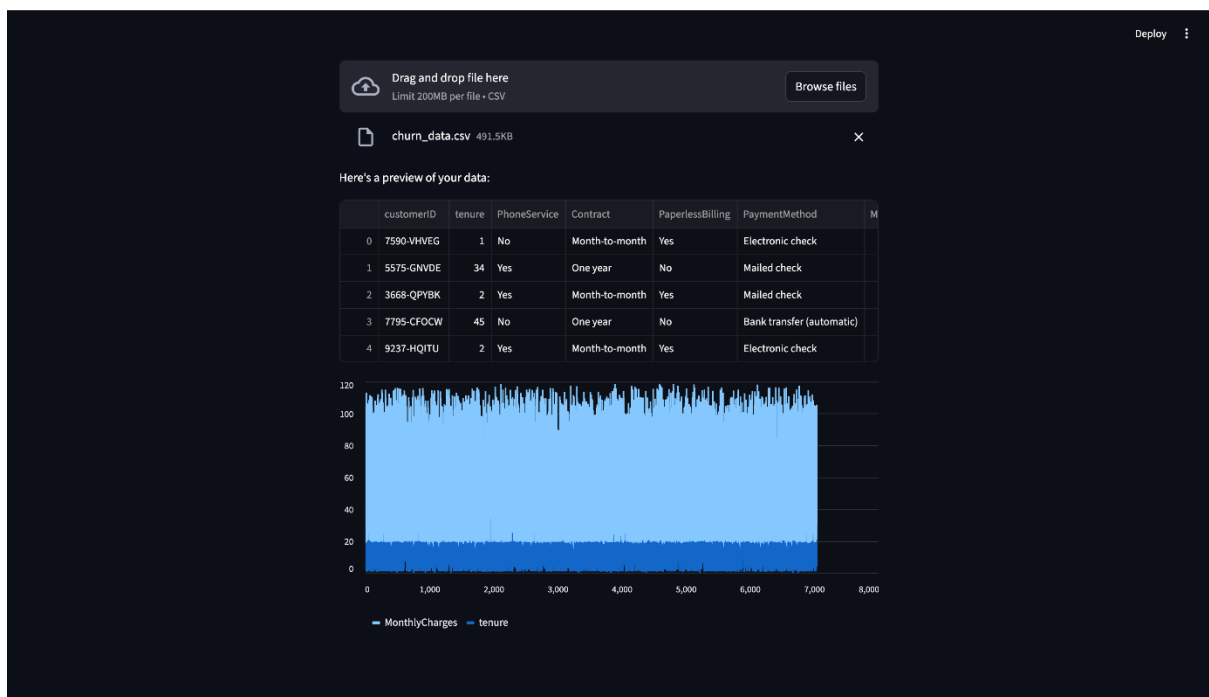
Figure 42: Streamlit-based prototype dashboard example (adaptable for medical AI tools)

What is Streamlit? A Complete Guide for Building Data Apps ...

Evidence Artefacts for Repository

- /frontend/app.py (Streamlit) or React components.

- Screenshots folder: /docs/screenshots/ with sequenced images (upload → processing → review → approve).

- Demo video: Short screen recording (e.g., using OBS) uploaded as /docs/demo_workflow.mp4 – showing end-to-end simulation on public data.

This interface ensures seamless integration into clinical workflows, with clear visual cues for AI assistance and mandatory oversight. For assessors, include annotated screenshots explaining user flow and compliance features (e.g., audit trails).