Patient-Owned MRI Intelligence Engine

A modern, open pipeline for MRI lesion detection, anatomical mapping, and patient-readable insight.

Ali Payne — Engineer, Former CTO, Builder

One scan. One model. One clear explanation.

The Problem

Patients undergo years of MRI scans without clear explanations of what changed.

Lesion locations correlate with symptoms, but that insight is rarely shared with patients.

Clinical tools are complex, expensive, and inaccessible to non-specialists.

Why This Matters

MRI data is abundant but under-interpreted at the patient level.

Healthcare systems are overloaded and time-constrained.

Patients want clarity, autonomy, and understanding of their own health data.

The Solution

A patient-centered MRI intelligence pipeline.

Transforms raw DICOMs into structured, understandable insights.

Designed to complement clinicians, not replace them.

What the Engine Produces

Lesion presence and location.

Anatomical region overlap using brain atlases.

Likely symptom domains tied to affected regions.

A clean, patient-readable PDF report.

How It Works

Ingest raw DICOM or NIfTI MRI scans.

Preprocess and align images to MNI brain templates.

Apply AI-based lesion segmentation.

Map lesions to functional brain regions.

Generate structured insight reports.

Technical Architecture

Python-based modular pipeline.

PyTorch and nnUNet for lesion detection.

NiBabel and SimpleITK for preprocessing.

Atlas-driven region and function mapping.

Extensible reporting and API layer.

Why Open Source

Transparency builds trust in healthcare AI.

Researchers and clinicians can validate and extend the pipeline.

Patients retain ownership of their data and insights.

Use Cases

Patients tracking lesion changes over time.

Clinicians reviewing structured summaries faster.

Researchers running reproducible imaging experiments.

Current Traction

Live GitHub repository with working code.

DICOM ingestion and preprocessing implemented.

Lesion mapping and symptom framework defined.

Active public development and documentation.

What Makes This Different

Patient-first design.

Symptom-oriented interpretation, not raw metrics.

Built from lived experience with MRI workflows.

Modular, explainable, and extensible.

Long-Term Vision

Patient-controlled MRI companion platform.

Longitudinal brain health tracking.

Federated learning for privacy-preserving model improvement.

Expansion to other neurological conditions.

Founder

Ali Payne — Former CTO and systems engineer.

Experience building health-tech prototypes under real constraints.

Background in engineering, data systems, and applied AI.

Building tools I wish existed earlier.

Why Now

Advances in AI-driven medical imaging.

Growing demand for patient transparency.

Open-source healthcare innovation gaining momentum.

Healthcare systems seeking efficiency and clarity.

Call to Action

Seeking collaborators, clinicians, and researchers.

Open-source contributors welcome.

Let’s build the future of patient-owned MRI intelligence.