Amber’s Script of Part I problem

Hello, and thank you for watching this video. This video presents our team’s solution to a clinical problem, as part of a digital health project.

The goal of this project is to transform complex medical imaging data into diagnostic insights using mathematical modelling and image analysis techniques.

The project is split into two parts: Part I focuses on brain MRI analysis, and Part II applies similar techniques to image-based feature extraction. Let’s begin with Part I.

Diffusion Tensor Imaging, or DTI is a specialised type of MRI that measures how water molecules move in different directions within the brain. This movement reveals the structure and condition of brain tissue, especially the nerve fibres. In this part of the project, we use DTI to analyse water diffusion patterns and identify subtle changes that may indicate damage or disease.

In healthy brains, water follows organised nerve fibres. But when tissue is damaged such as in stroke, tumours, or early-stage neurodegeneration, that pattern breaks down.

This method detects those subtle changes, turning raw scan data into meaningful clinical indicators, helping doctors detect problems earlier and with more confidence.

I’ll now hand over to [Name] to show how our team brought this to life.