

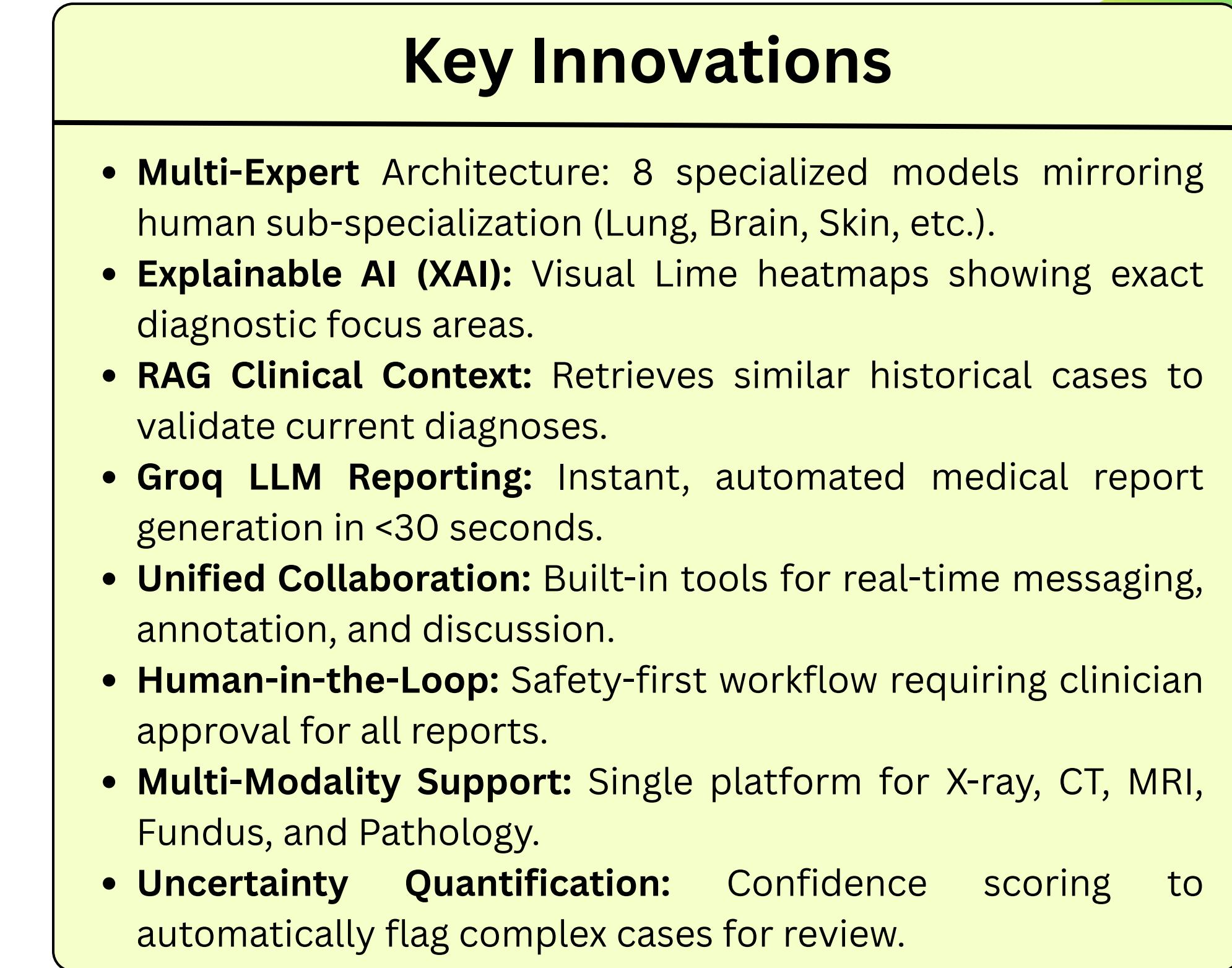
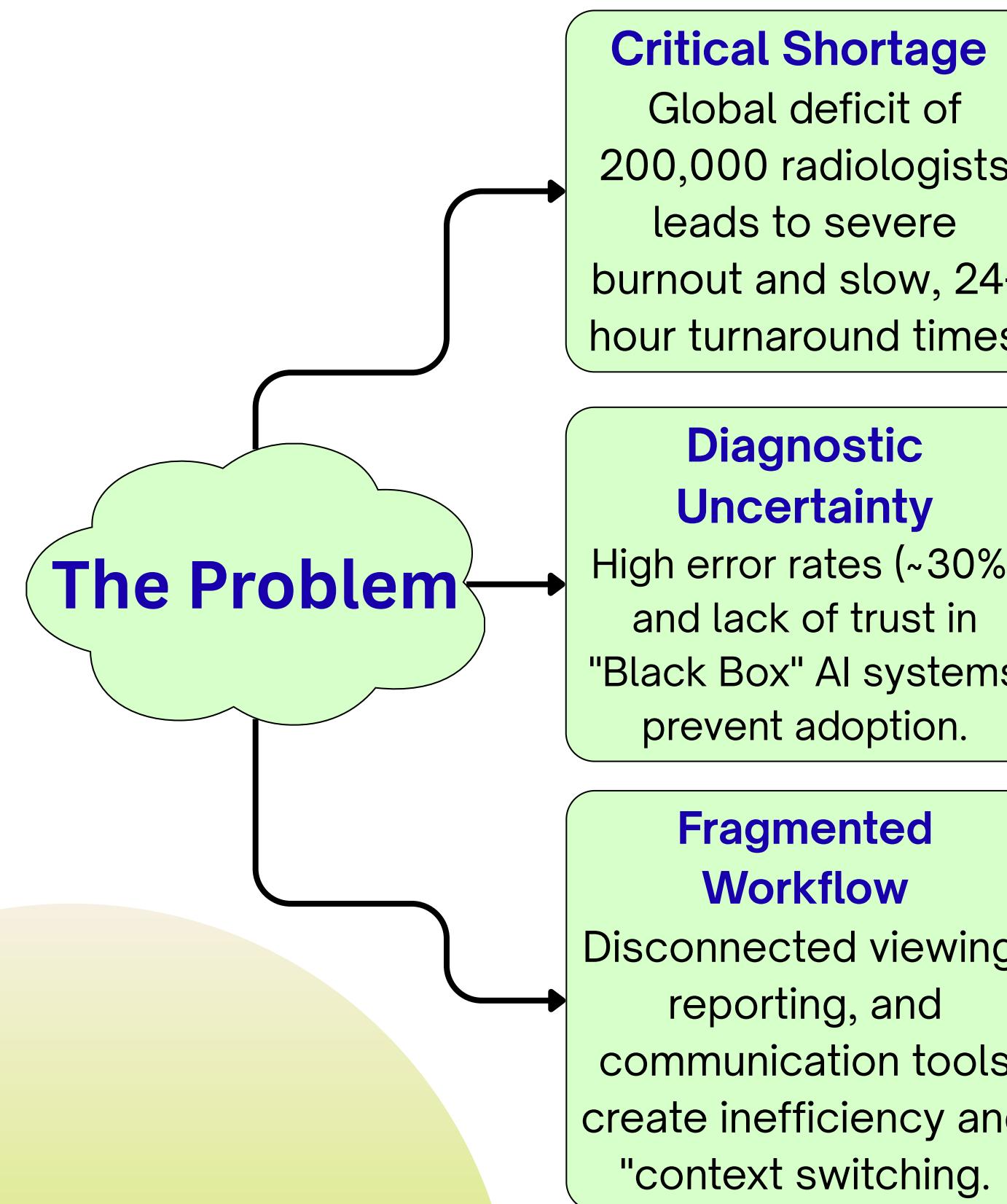
# Pixels TO CLINICAL reasoning

TEAM : WEIGHTS Of SIN



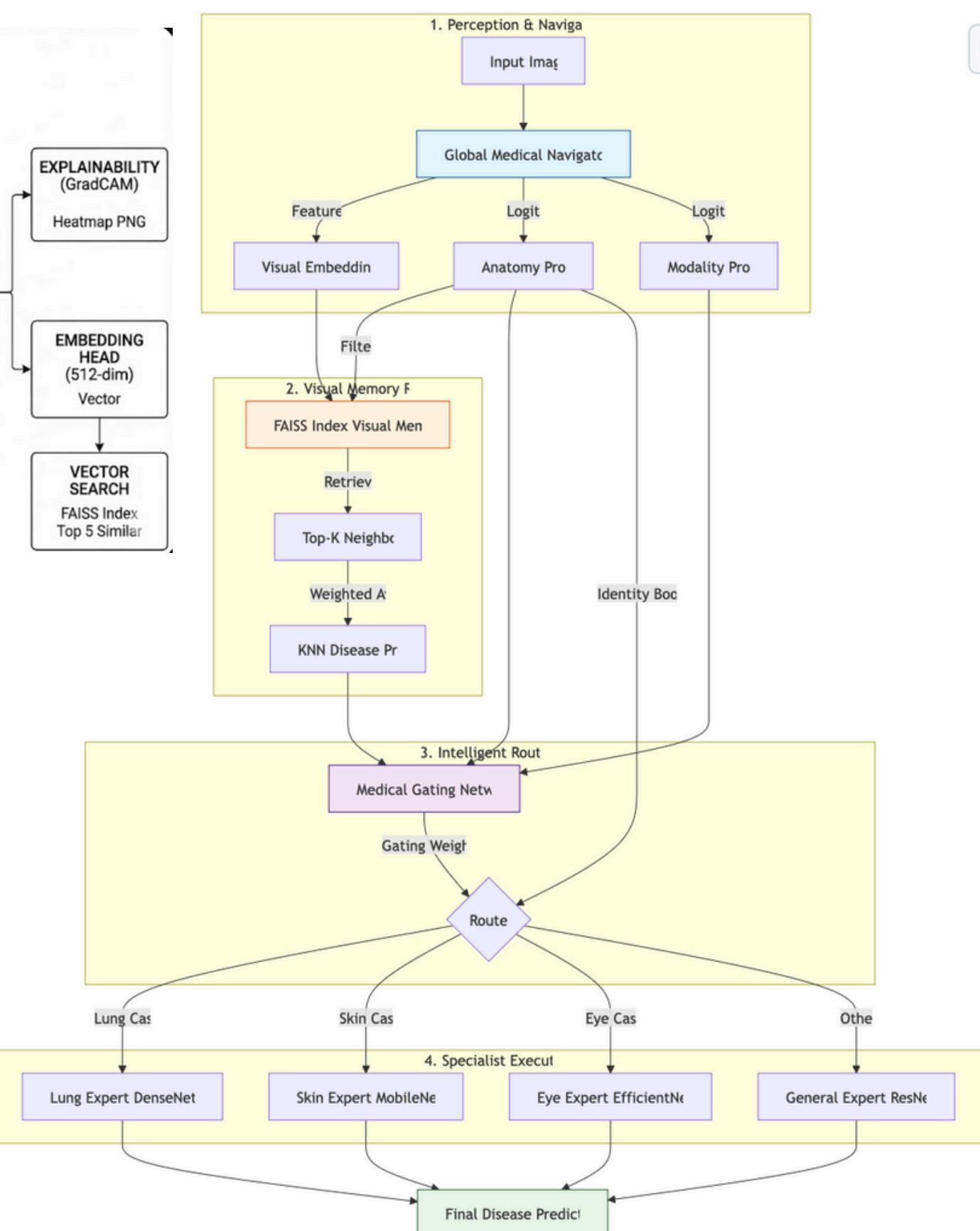
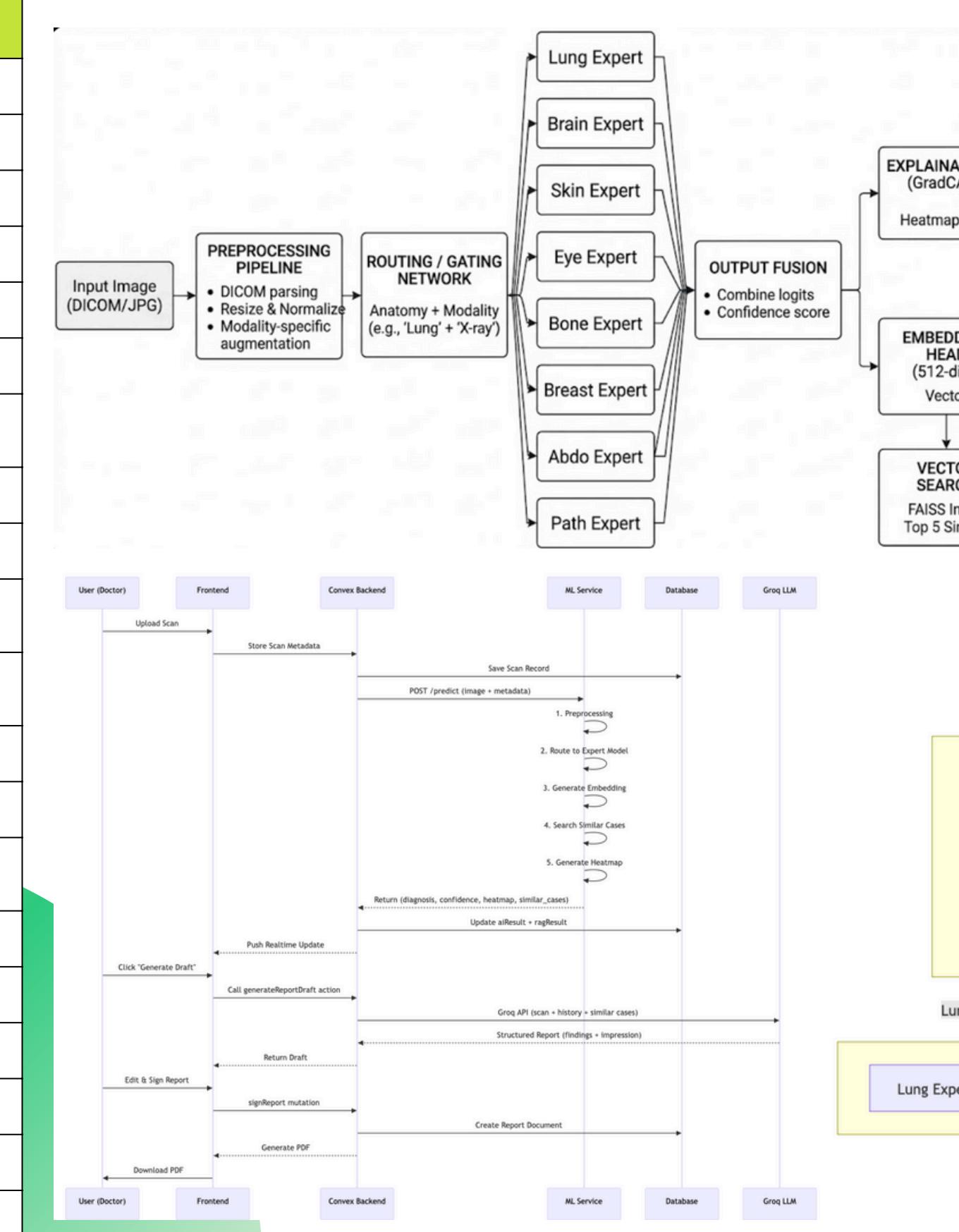
DJSCE

# Problem Statement



# Tech Stack & Architecture

Layer	Technology	Version
Frontend	Next.js	14.2.0
React	18.x	UI component library
TypeScript	5.x	Type-safe development
Tailwind CSS	3.3.0	Utility-first styling
Framer Motion	12.28.1	Animations and transitions
Lucide React	0.562.0	Icon library
Spline	4.1.0	3D graphics for marketing and landing pages
jsPDF	4.0.0	Client-side PDF generation
Backend	Convex	1.31.6
Clerk	6.36.9	Authentication & user management
Groq	Latest	LLM API (llama-3.1-70b-versatile)
FastAPI	0.100+	Python ML inference server
Machine Learning	PyTorch	2.0+
torchvision	0.15+	Pre-trained models & image transforms
FAISS	1.7.4	Vector similarity search
Pillow	10.0+	Image preprocessing
NumPy	1.24+	Numerical computing
scikit-learn	1.3+	ML utilities
Infrastructure	Convex Cloud	—
GitHub Actions	—	CI/CD pipelines



# Clinical Command Center

Welcome back, • On Duty

Quick Scan

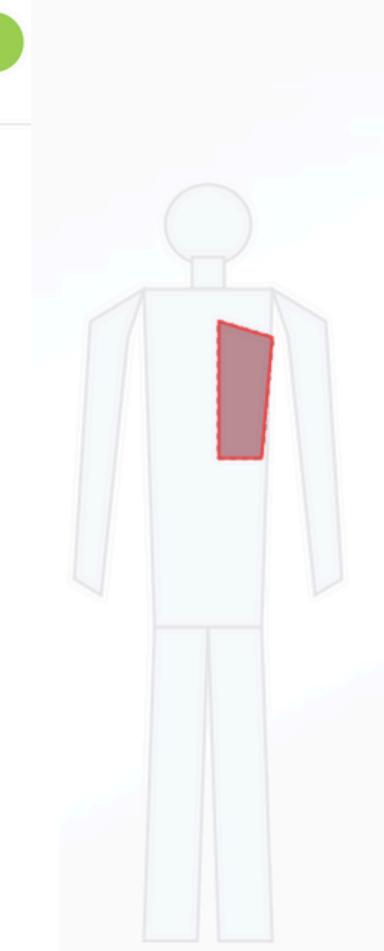
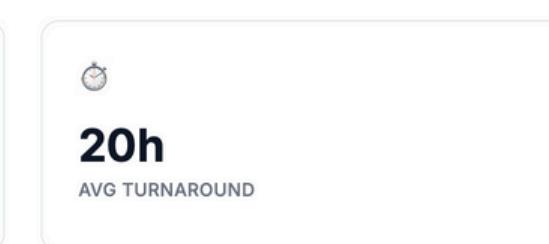
+ New Patient

Messages Patient Explorer Settings

View Patient History

Hide History

Completed



## Patient Queue

20 active cases

PATIENT	ANATOMY	AI FINDING	STATUS
DP Demo Patient 23/1/2026	Chest / Lung	High Risk	• Needs Review
DP Demo Patient 23/1/2026	Chest / Lung	High Risk	• Needs Review
DP Demo Patient 23/1/2026	Chest / Lung	High Risk	• Needs Review
DP Demo Patient 23/1/2026	Chest / Lung	High Risk	• failed
DP Demo Patient 23/1/2026	Chest / Lung	High Risk	• failed

## Case Distribution



## CLINICAL DIAGNOSTIC REPORT

DETECTED ANATOMY: SKIN  
ROUTING CONFIDENCE: 10.9%

- VISUAL MEMORY EVIDENCE (Top 3 Matches):  
• Match #1: 5.8% Similarity (Source: Unknown)  
• Match #2: 5.5% Similarity (Source: Unknown)  
• Match #3: 5.0% Similarity (Source: Unknown)
- Finding: Nevus (50.0%)  
Finding: Vascular Lesion (50.0%)  
Finding: Basal Cell Carcinoma (50.0%)

Generating Heatmap...

100% 500/500 [01:37<00:00, 5.10it/s]



## AI Analysis

### Primary Finding

Lung Infarction due to Pulmonary Emboli

Confidence 87%

High Severity

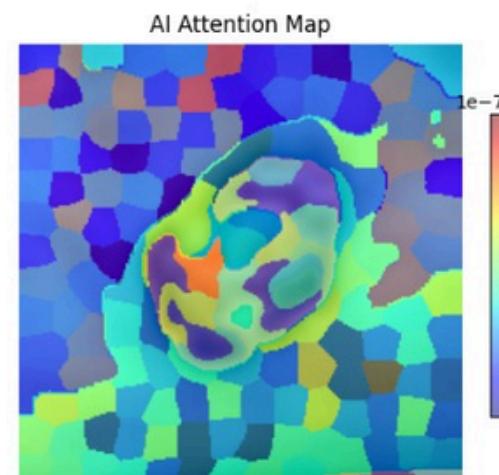
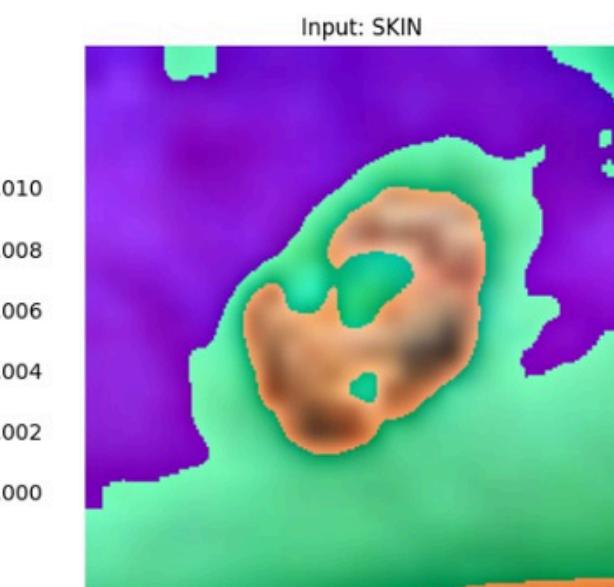
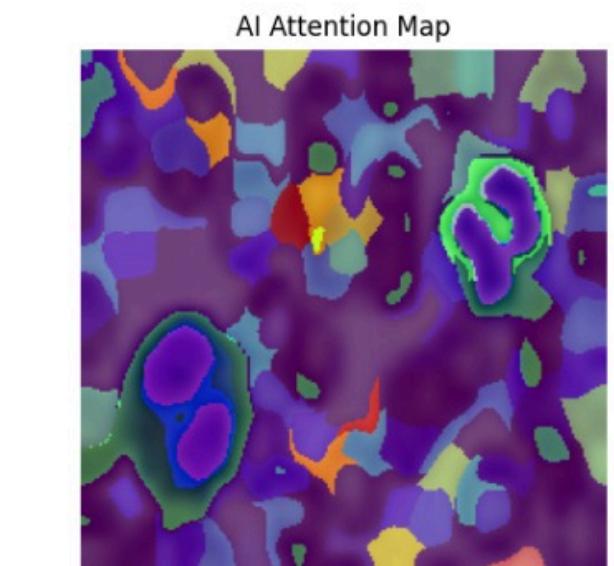
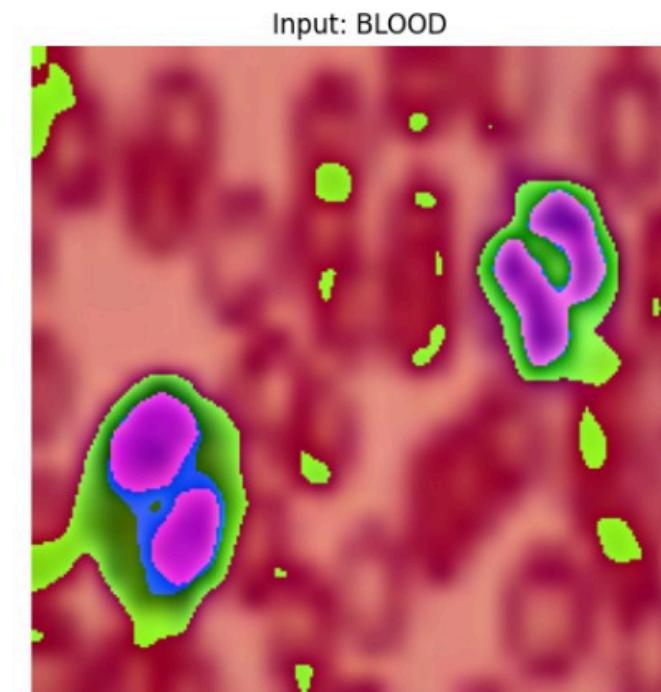
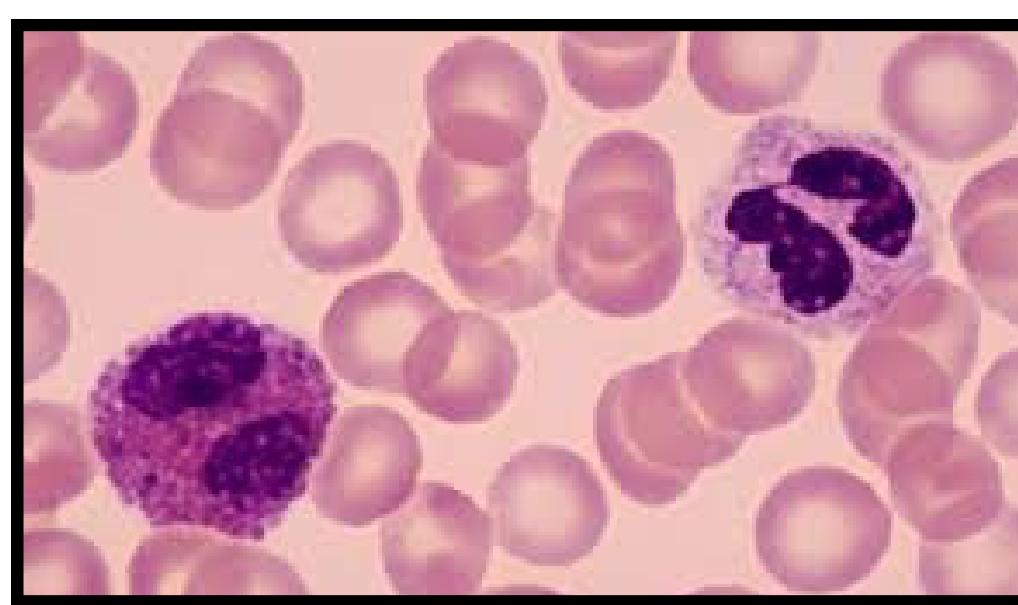
The radiographic features of acute pulmonary thromboembolism are insensitive and nonspecific. The most common radiographic findings in the Prospective Investigation of Pulmonary Embolism Diagnosis (PIOPED) study were atelectasis and patchy pulmonary opacity. In most cases of pulmonary emboli the chest x-ray is normal. This patient had pulmonary emboli, which were seen on a CECT. The peripheral consolidation is seen in the region of the emboli and can be attributed to hemorrhage in the infarcted area.

### Similar Cases (RAG)



Flag Critical

Generate Draft



# Impact & Feasability

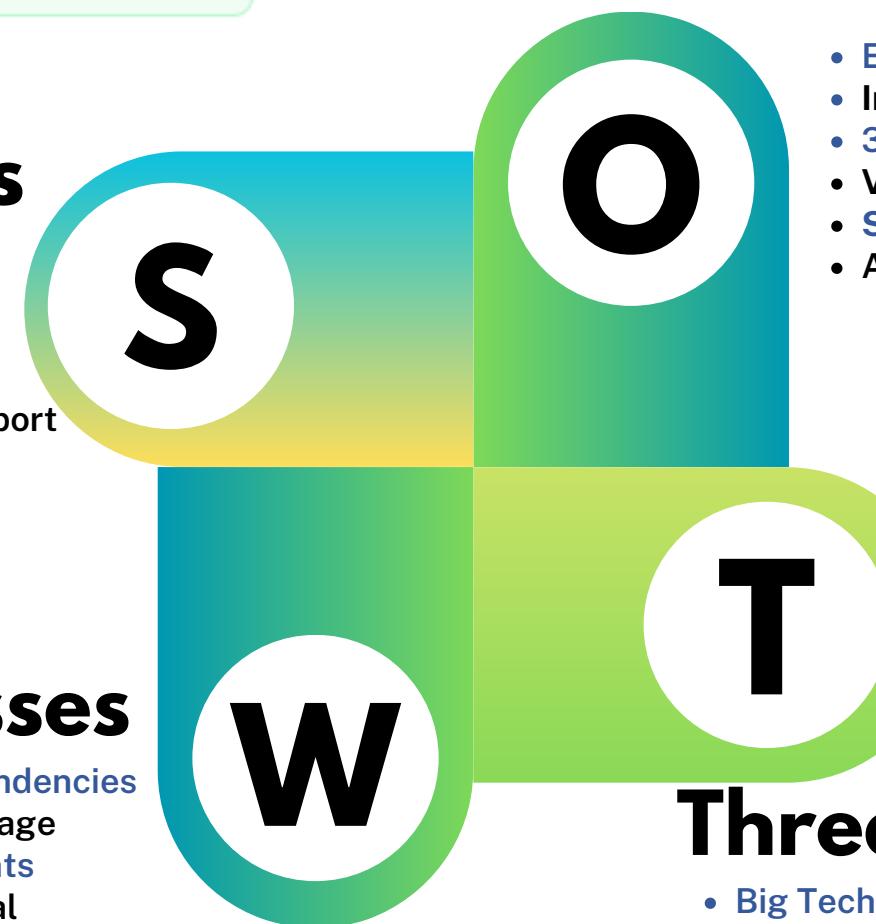
**TOTAL SAM**  
**\$15.5B** Annually

## Strengths

- Multi-Expert Architecture
- Explainable AI
- RAG System
- Multi-Modality Support

## Weaknesses

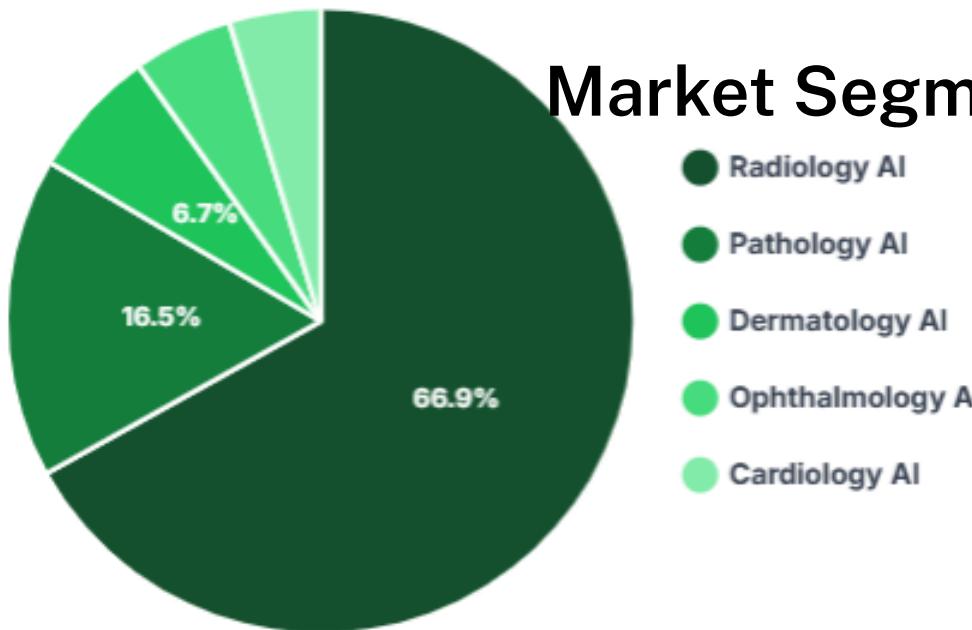
- Training Data Dependencies
- Rare Disease Coverage
- Capital Requirements
- Regulatory Approval



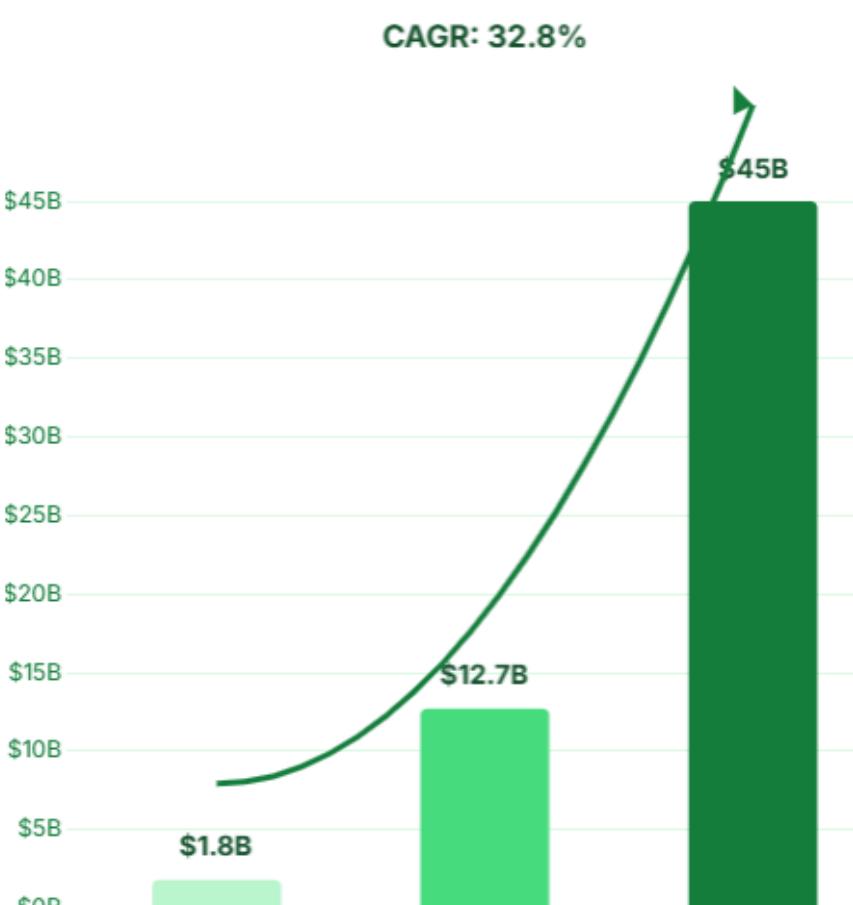
## Opportunities

- Emerging Markets
- Insurance Companies
- 3D Imaging Support
- Voice Interface
- SaaS Platform
- API Marketplace

## Market Segment 2030



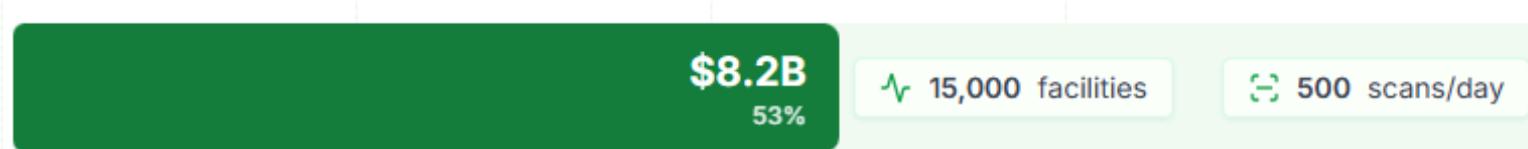
## Market Expansion (2024-2035)



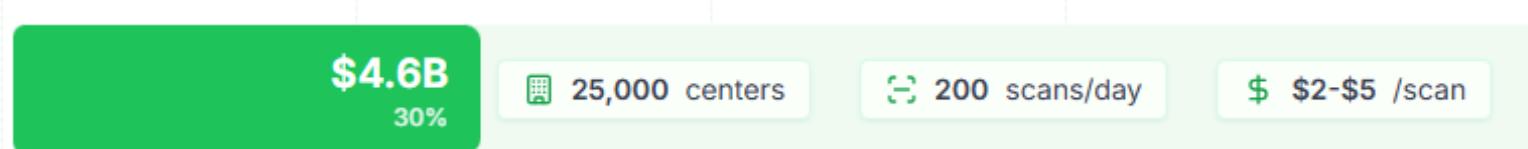
## Threats

- Big Tech Entry
- Open Source Competition
- Pricing Pressure
- Model Drift

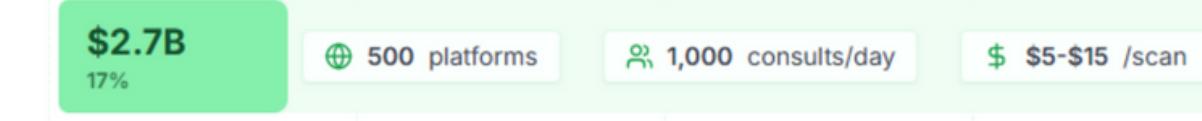
**Hospitals**  
Secondary/Tertiary



**Imaging Centers**  
Diagnostic Labs



**Telemedicine**  
Digital Platforms



## PESTLE

### Social

- 50%+ radiologist burnout
- Patient demand for transparency
- AI trust and bias concerns

### Legal

- FDA change control plans
- HIPAA/GDPR compliance
- Malpractice liability risks

### Environmental

- Model training energy costs
- Hardware e-waste generation

### Political

- Healthcare digitization initiatives (NDHM, EU)
- FDA AI/ML regulatory frameworks
- Telemedicine policy expansion

### Technological

- Deep learning & explainable AI advances
- Edge computing & 5G enablement



**DJSCE**

End

Audit Trails

# Thank you

Built to assist clinicians with transparent, anatomy-aware medical image analysis.

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