इलेक्ट्रॉनिकी एवं सूचना प्रौद्योगिकी मंत्रालय
MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY
सत्यमेव जयते

एसटीपीआई STPI

MedTech

LogicBoots PRIVATE LIMITED

Artificial Intelligence in Medical Imaging

Transforming Diagnostics and Patient Care

Presented by: Team Logicboots

Medtech SGPGI Lucknow

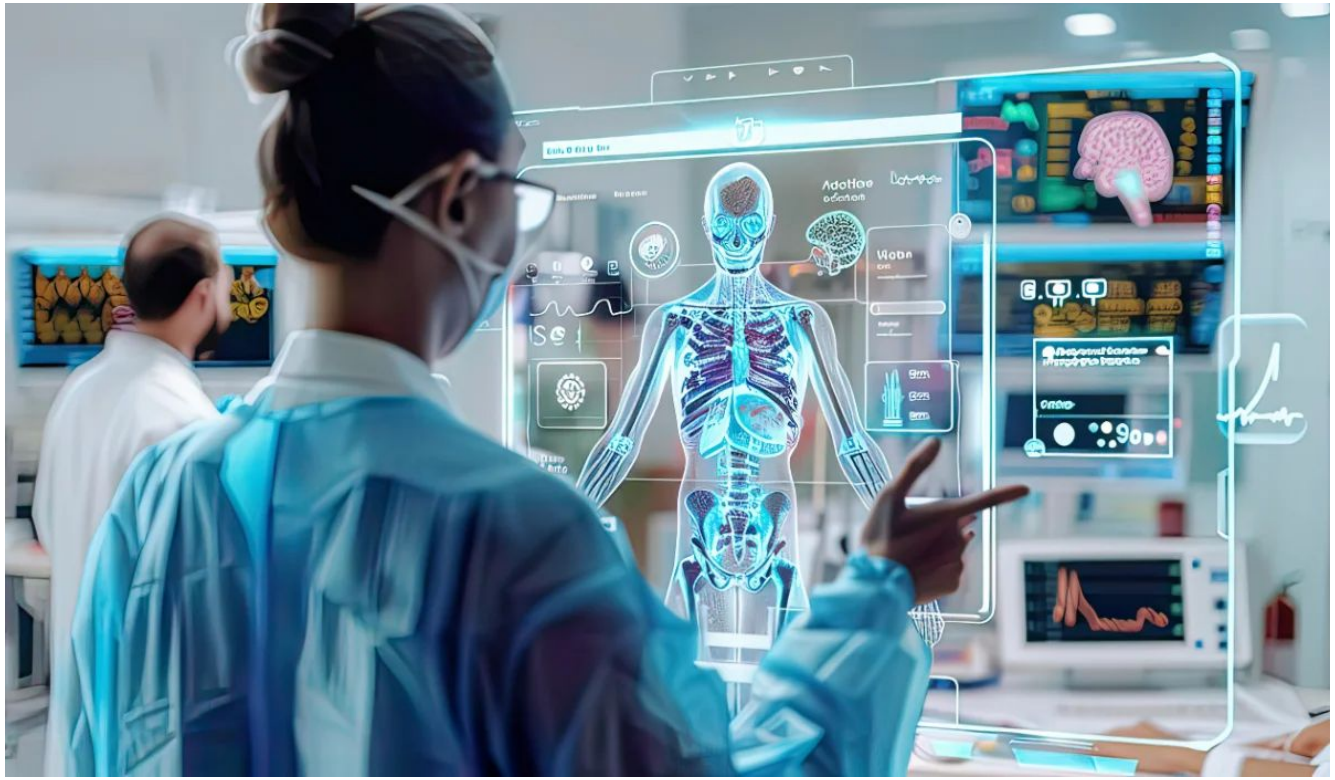
Introduction

What is Artificial Intelligence (AI)?

Brief overview of AI in healthcare

Why focus on medical imaging?

Role of Medical Imaging in Healthcare



- Importance of diagnostic imaging (X-rays, MRI, CT, etc.)
- High demand for accurate and quick interpretation
- Challenges: radiologist shortages,human error,time constraints

How AI Works in Imaging

Data Collection: Large datasets of medical images, often labeled by radiologists.

Model Training: Deep learning models (like CNNs) learn to recognize patterns associated with specific conditions.

Inference: AI analyzes new images and provides output such as:

Anomaly localization (e.g., bounding boxes)

Diagnosis prediction

Risk scores or severity levels

Human-AI Collaboration: AI assists clinicians, offering a second opinion or prioritising cases

Key Applications of AI in Imaging

Disease detection (e.g., cancer, pneumonia)

Image enhancement and reconstruction

Workflow optimisation in radiology

Predictive analytics and risk stratification

Types of Imaging Modalities Involved

AI is applied across a wide range of imaging technologies :

X-rays

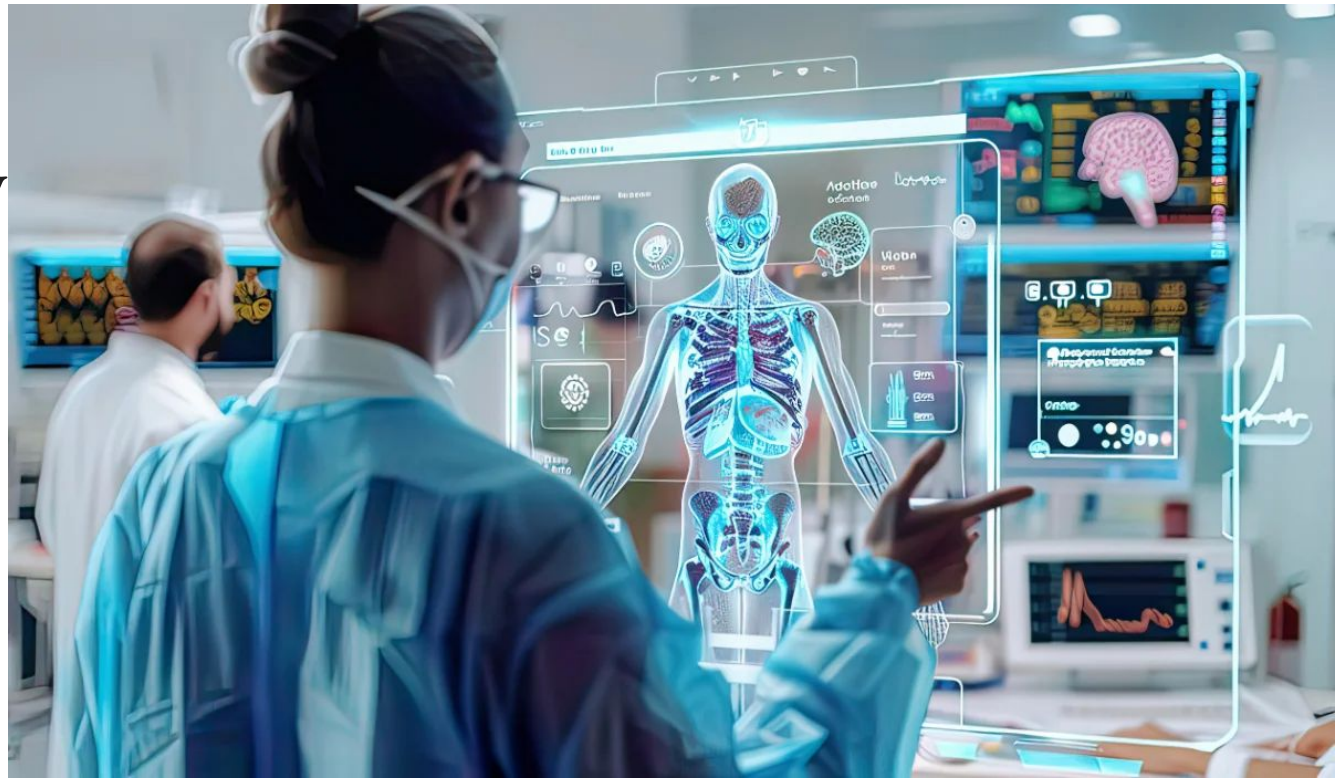
Mammography

CT scans

MRI

Ultrasound

PET scans



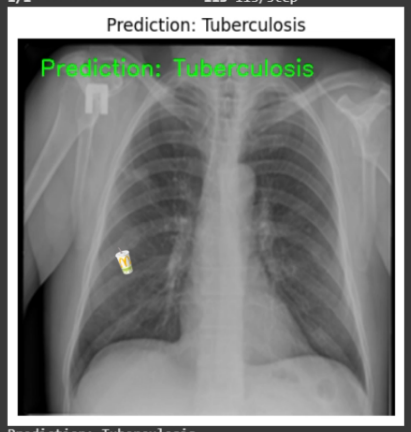
Histopathology slides (microscopic images)

How Logicboots is working in AI Imaging

```
    # Display image in notebook using matplotlib
    plt.imshow(original_img)
    plt.title(f"Prediction: {predicted_class}")
    plt.axis('off')
    plt.show()

    print(f"Prediction: {predicted_class}")
else:
    print("Error: Could not preprocess image.")
```

```
1/1 ━━━━━━━━━━━━━━━━━━━━ 11s 11s/step
```




```
Prediction: Tuberculosis
```

Start coding or generate with AI.

Tuberculosis

PNEUMONIA DETECTION Using Deep Learning

PNEUMONIA DETECTION Using Deep Learning

Choose File person1_virus_6.jpeg

Result: Pneumonia

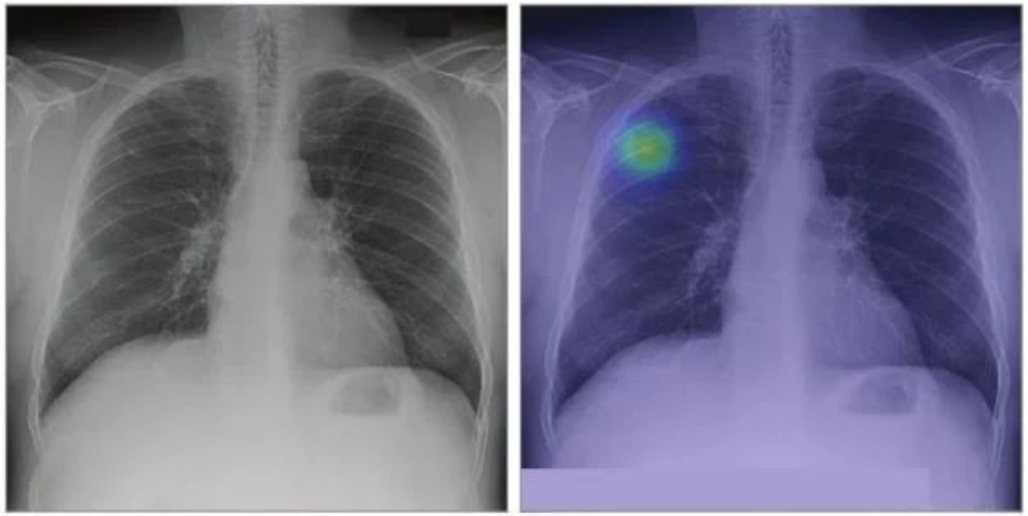
Pneumonia

Real-World Examples

Figure 2. Frontal Chest Radiographs of Patients With Malignant Pulmonary Nodules Missed by NLST Radiologists But Detected by Artificial Intelligence Algorithm

C Chest radiograph of man in his 50s (without AI detection)

D Chest radiograph of man in his 50s (with AI detection)



Lung cancer detection using CT scans

AI in mammography for breast cancer screening

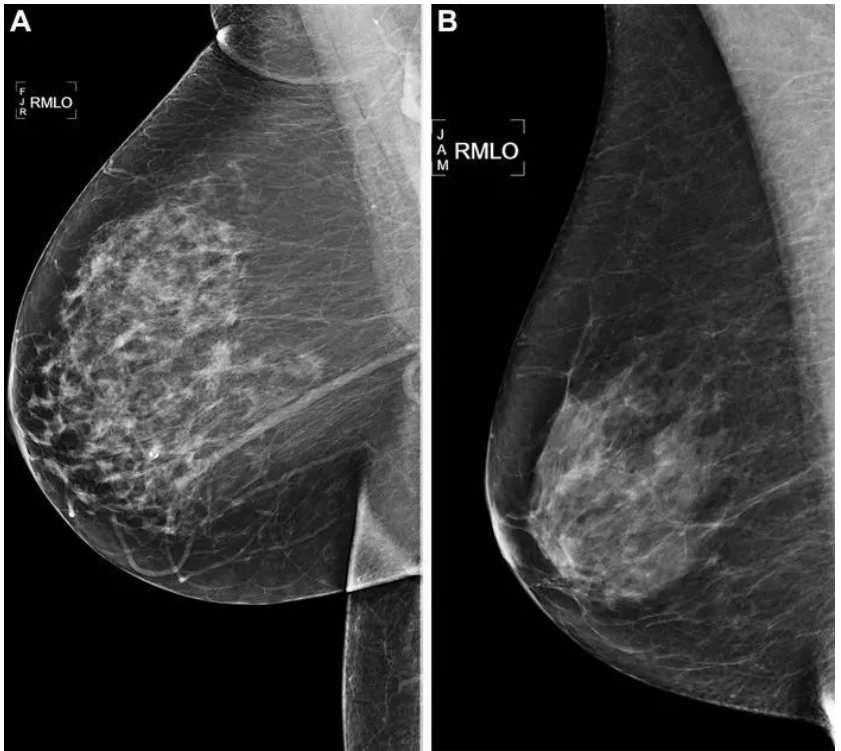
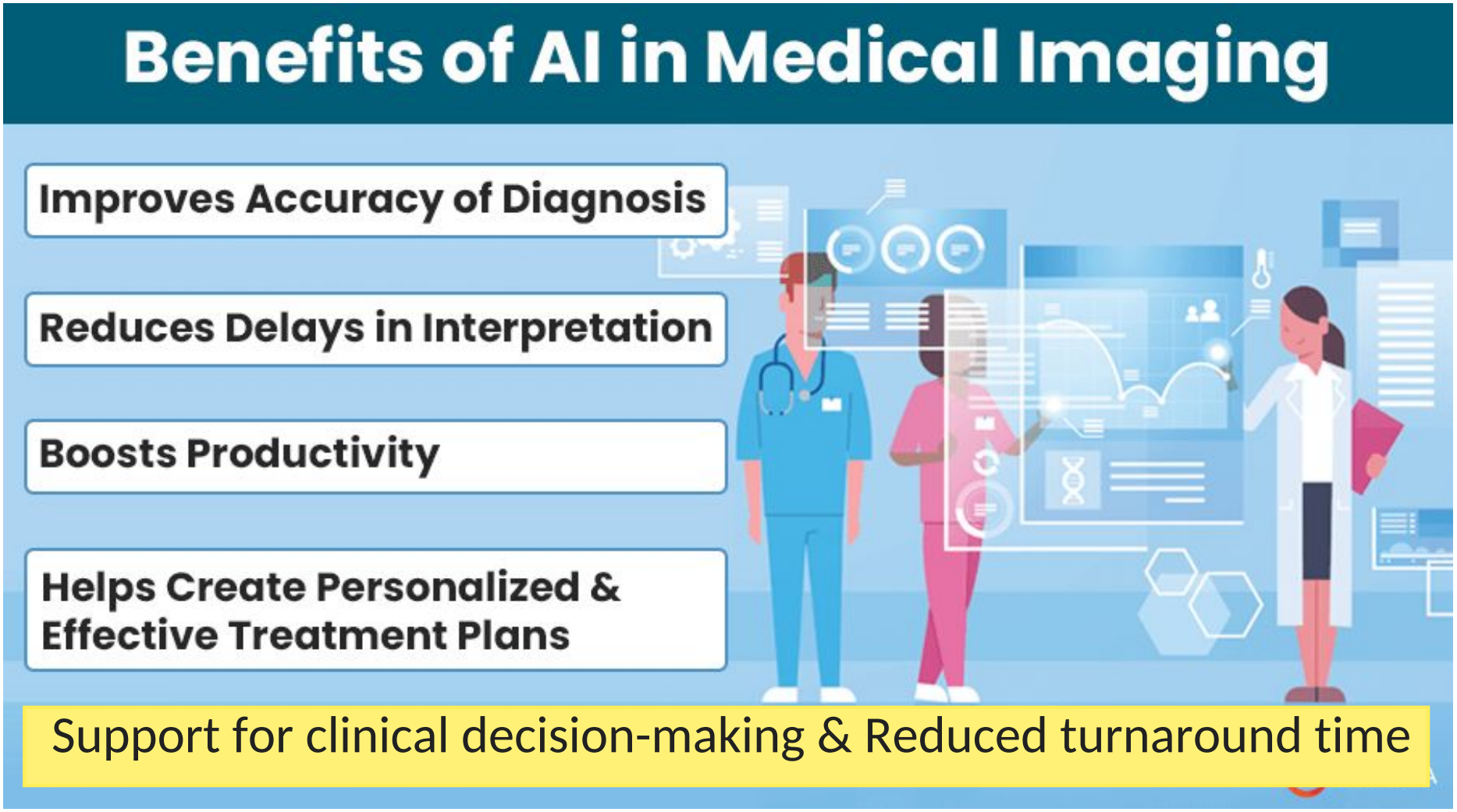
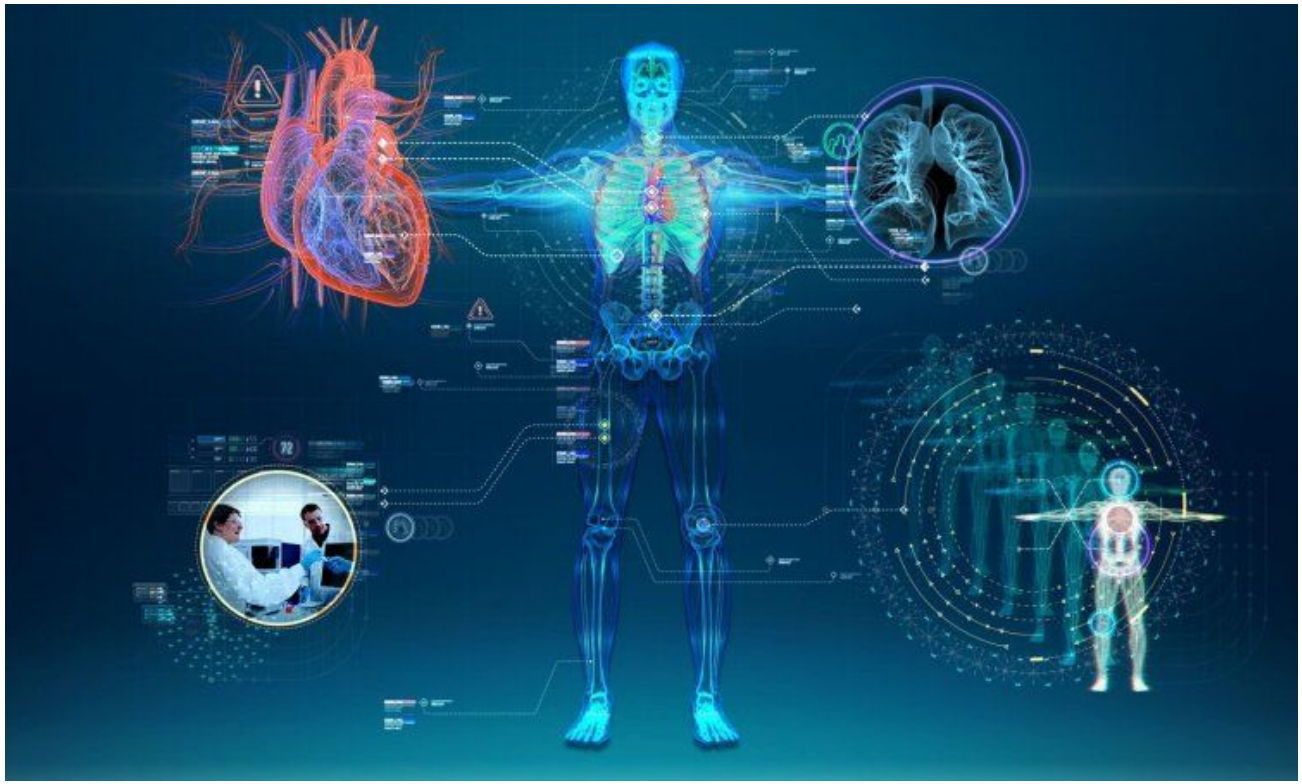


Image Credits : itonline & Eurekalert

Benefits of AI in Imaging



Future Trends



Personalized diagnostics

Integration with Electronic Health Records

AI + Robotics in interventional radiology

Federated learning for global collaboration

AI-Based Medical Imaging Market

PRESCIENT & STRATEGIC INTELLIGENCE
Where knowledge inspires strategy

Market Growth Will Accelerate at a CAGR (2021–2030)

30.4%

MARKET SIZE

2021
$1,093.0 Million

2030
$11,921.4 Million

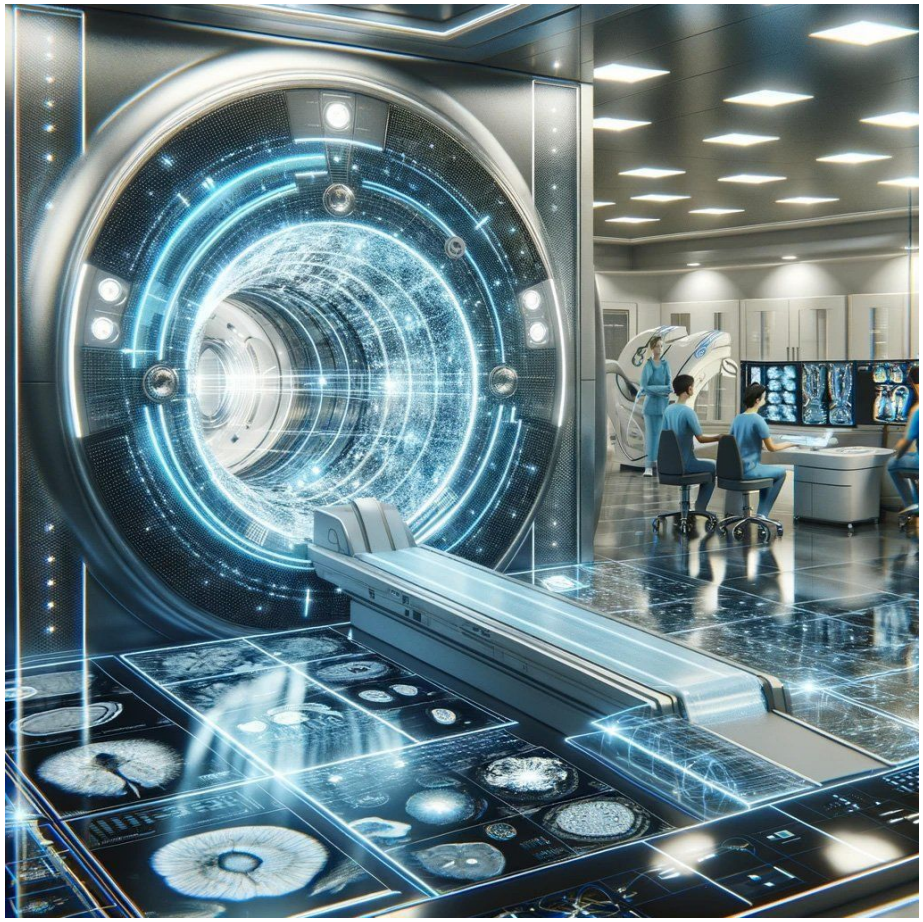
APAC is Expected to grow with over **30% CAGR**

GROWTH DRIVERS

- High investment in healthcare sector
- Advancements in imaging technologies
- Rise in prevalence of chronic diseases

Conclusion

THANK



YOU

AI is revolutionizing medical imaging

Augments—not replaces—human experts

The future holds promise for more precise, faster, and affordable diagnostics