Revolutionising Anatomy Education with AR/VR

Group Name : Out Of Scope

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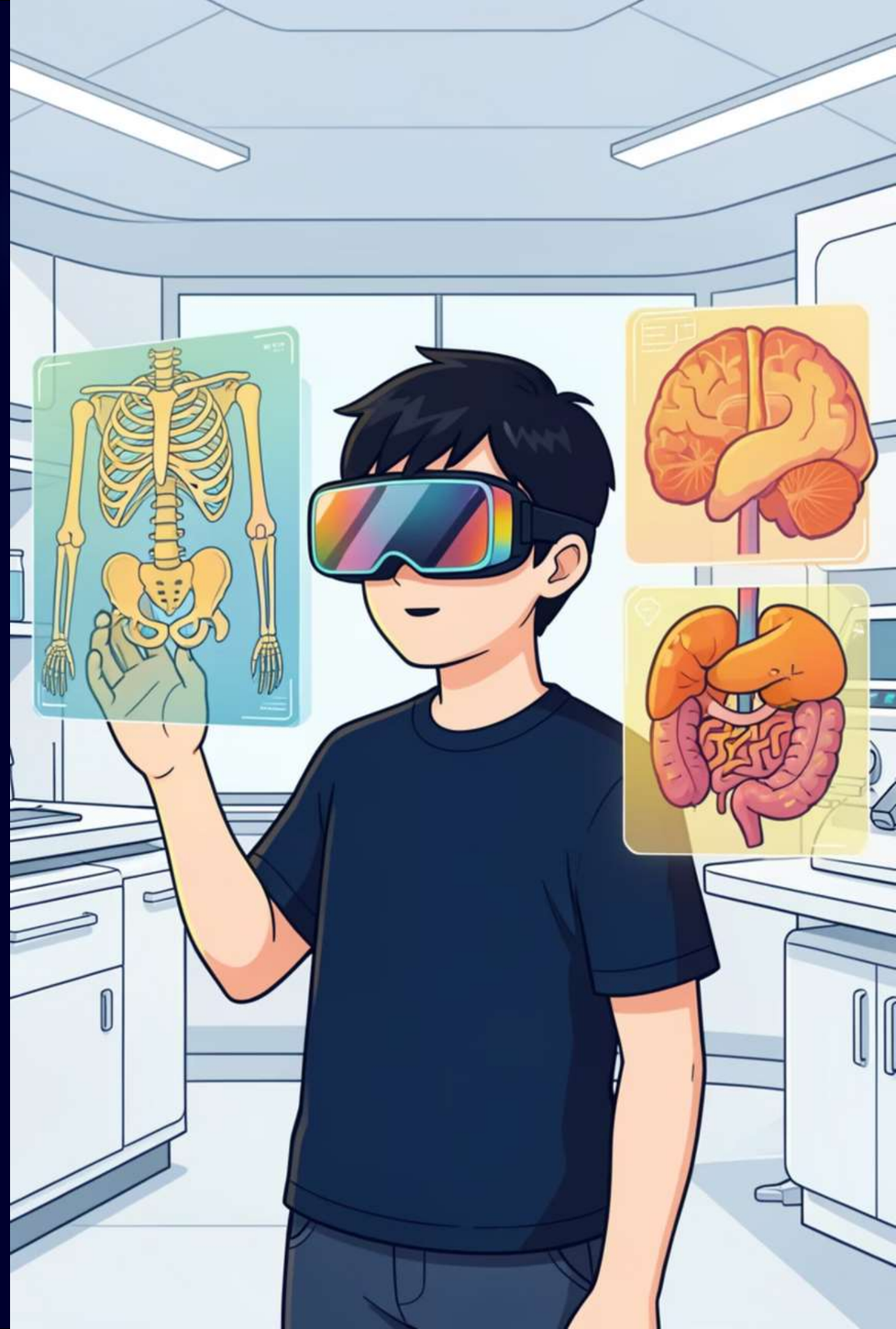
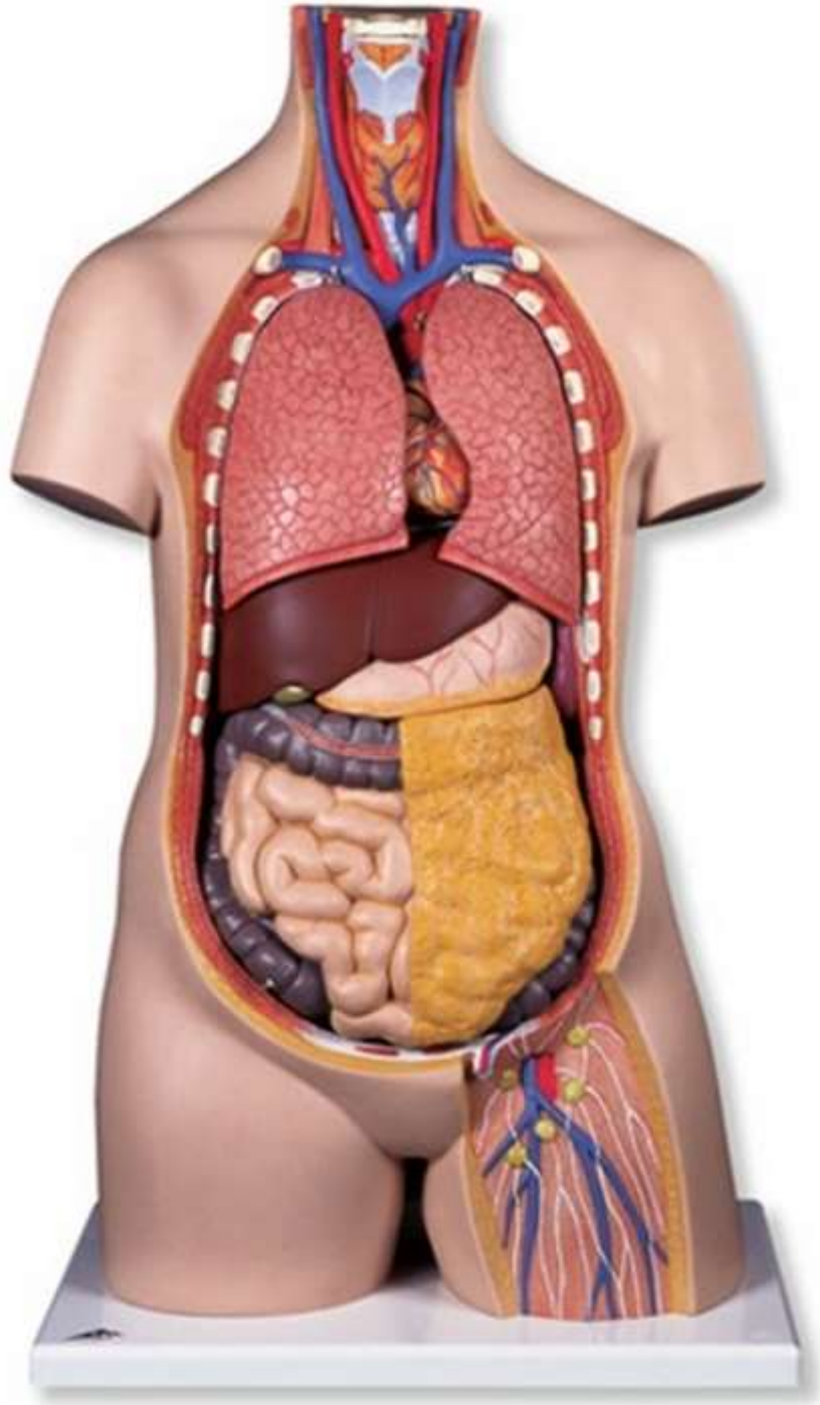


Problem Statement

- Anatomy learning relies on static 2D diagrams and textbooks
- Students find it difficult to visualize 3D organ structures
- Complex spatial relationships are hard to understand and remember
- Limited access to cadavers and physical models
- Existing digital tools offer passive learning with low interaction
- This results in low engagement and poor conceptual clarity
- There is a need for a cost-effective, interactive solution
- AR/VR-based anatomy learning enables 3D visualization, interaction, and better understanding



The Challenge of Traditional Anatomy Learning

Limited Engagement

Static 2D diagrams often fail to capture student attention and enthusiasm.

Conceptual Difficulty

Understanding intricate 3D relationships from flat images can be a significant hurdle for beginners.

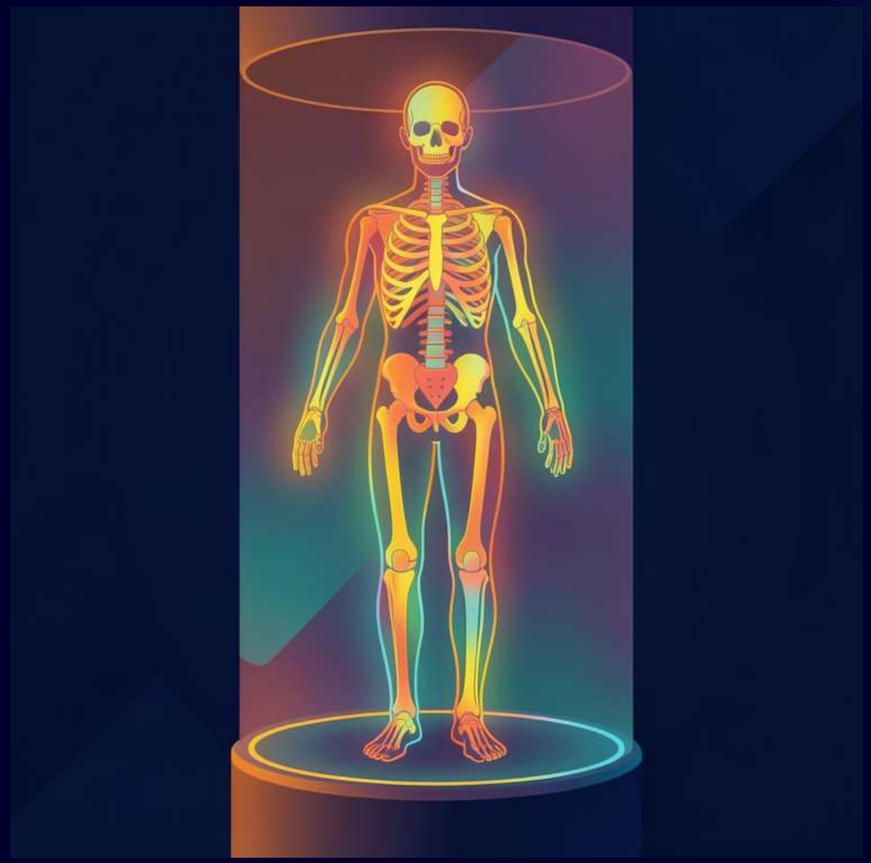
Passive Learning

Traditional methods typically involve passive absorption of information rather than active exploration.

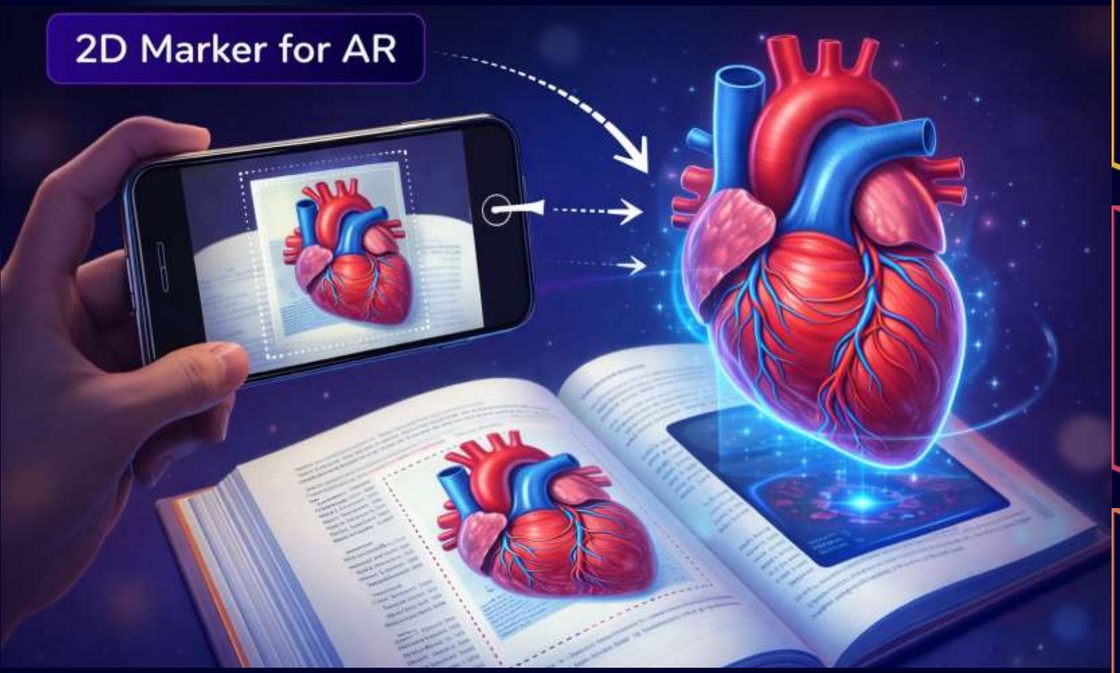
Introducing Interactive 3D Visualisation

Our project develops a beginner-friendly AR/VR-based anatomy learning application. It leverages the power of interactive 3D visualisation to simplify the understanding of human anatomy.

Students can immerse themselves in a dynamic learning environment, moving beyond the limitations of traditional textbooks.



How It Works: Seamless AR Integration



1

2D Image as Marker

A 2D image from a textbook acts as a reference marker for the system.

2

Camera Detection

When the device's camera detects this image, it triggers the AR experience.

3

3D Model Overlay

A pre-designed 3D anatomical model is then displayed directly on the image, creating an immersive overlay.

Dynamic Interaction for Deeper Understanding

The application empowers users with advanced interactive capabilities, far beyond what static images can offer.

- **Rotate Models**

  Examine structures from every angle, gaining a comprehensive spatial understanding.

- **Zoom & Pan**

  Focus on intricate details or view the broader context of anatomical systems.

- **Explore Layer-by-Layer**

  Dissect and rebuild organs virtually, understanding their complex internal architecture.

Technological Foundation

Our application is built on robust and widely adopted development platforms, ensuring stability and rich functionality.

Unity for 3D Rendering

Unity provides the powerful engine for creating and rendering high-fidelity 3D anatomical models and interactive environments.

Vuforia for Image Recognition

Vuforia's advanced computer vision capabilities enable accurate and rapid detection of 2D textbook images as AR markers.

Key Benefits of Our Approach

Enhanced Conceptual Clarity

Visualising 3D structures directly leads to a much clearer understanding than 2D diagrams.

Increased Engagement

Interactive and immersive experiences captivate students and foster a deeper interest in anatomy.

Self-Paced Learning

Students can explore at their own pace, revisiting complex areas as needed without external pressure.

More Effective Education

The combination of these benefits results in a significantly more impactful and memorable learning process.

Project Scope: Initial Focus

For our initial 2-3 week project timeframe, we are concentrating on a targeted set of anatomical structures to ensure a high-quality, beginner-friendly experience.

1

5-10 Vital Organs

We will include a selection of 5 to 10 fundamental 3D organs critical for foundational anatomy learning.

2

Low Scope, High Impact

By keeping the scope focused, we ensure a polished and effective initial application within the tight development schedule.

Resource / Budget

Material Resources

- AR-compatible smartphone for testing and demonstration
- Laptop / PC (minimum 8 GB RAM) for Unity development
- Unity (Student Version) for AR application development
- Vuforia SDK for 2D image (marker) recognition
- Free/open-source 3D anatomical models
- Textbook images used as AR markers

Budget

- No paid software or hardware required
- All tools are free for academic use
- Devices are already available with team/university
- No external funding required

Thank You