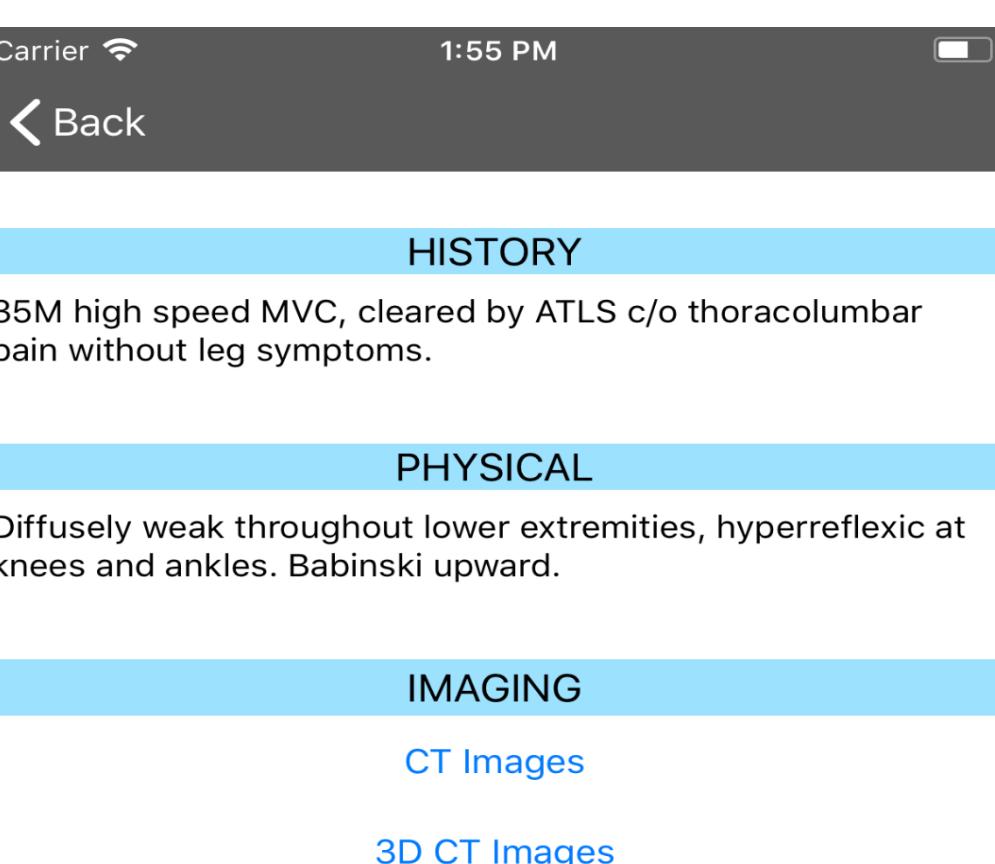
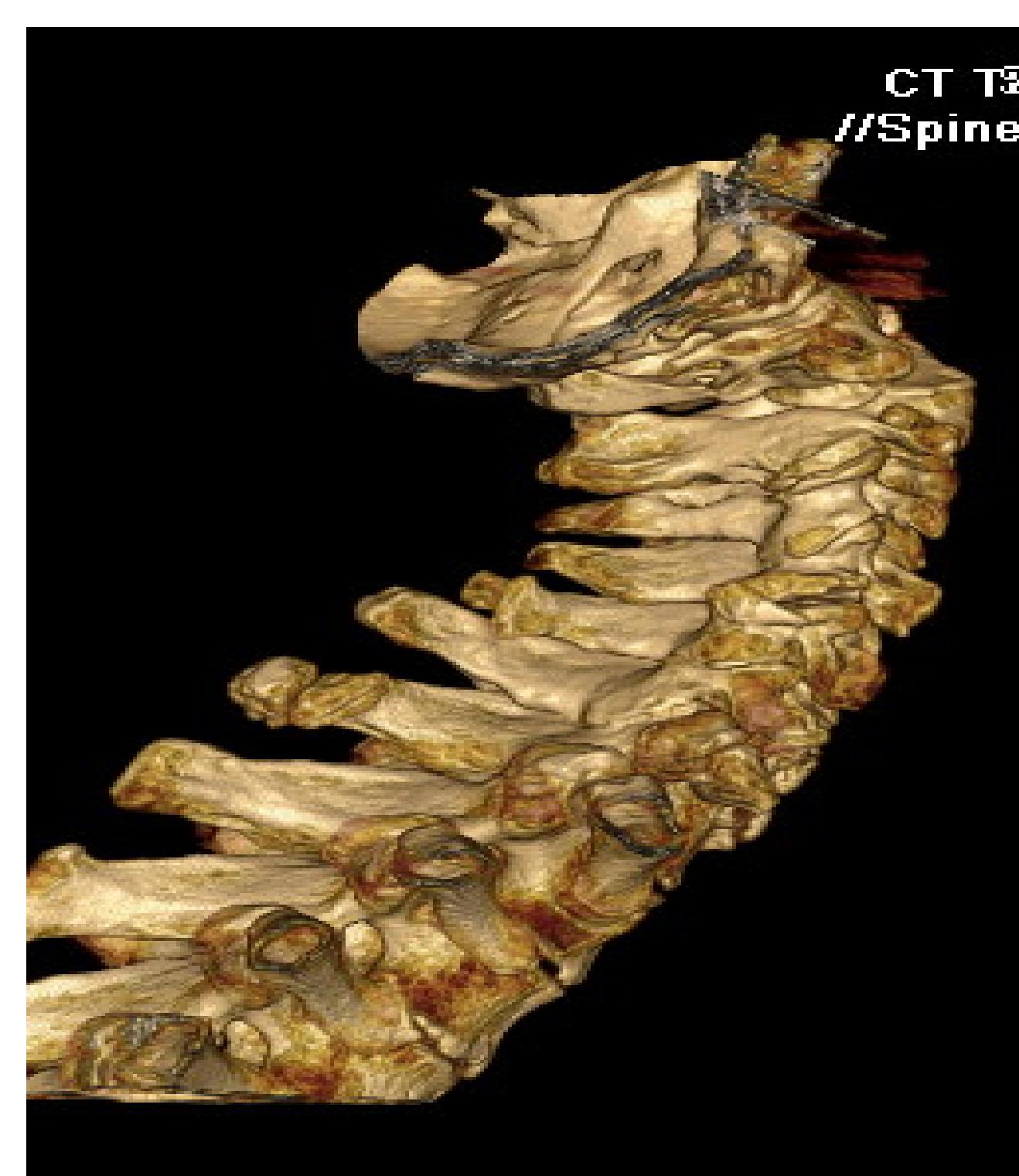


Case Studies

Within the cases section, the user selects a case and is directed to a page that contains the patient's general history, information from their physical examination, and links to the pre-op CT images. This information will help the user answer the upcoming multiple choice questions.



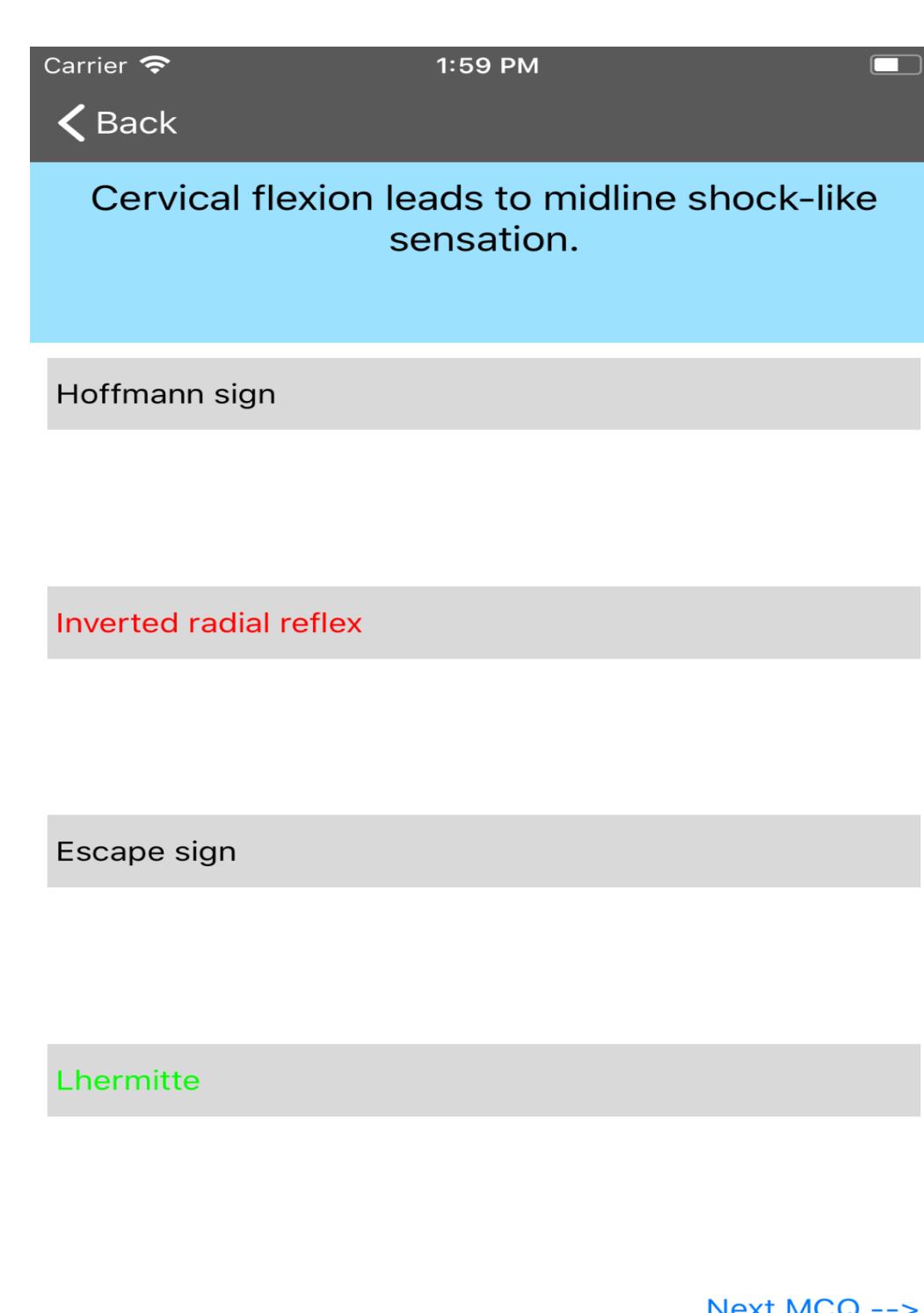
Images



Spinal surgical cases often consist of 2D and 3D images saved after each patient undergoes CT or MRI scans. They are unique and valuable; even image manipulation software cannot design such realistic spinal deformity scans. Our team of medical surgeons anonymize the images and incorporate them into the medical cases mentioned above.

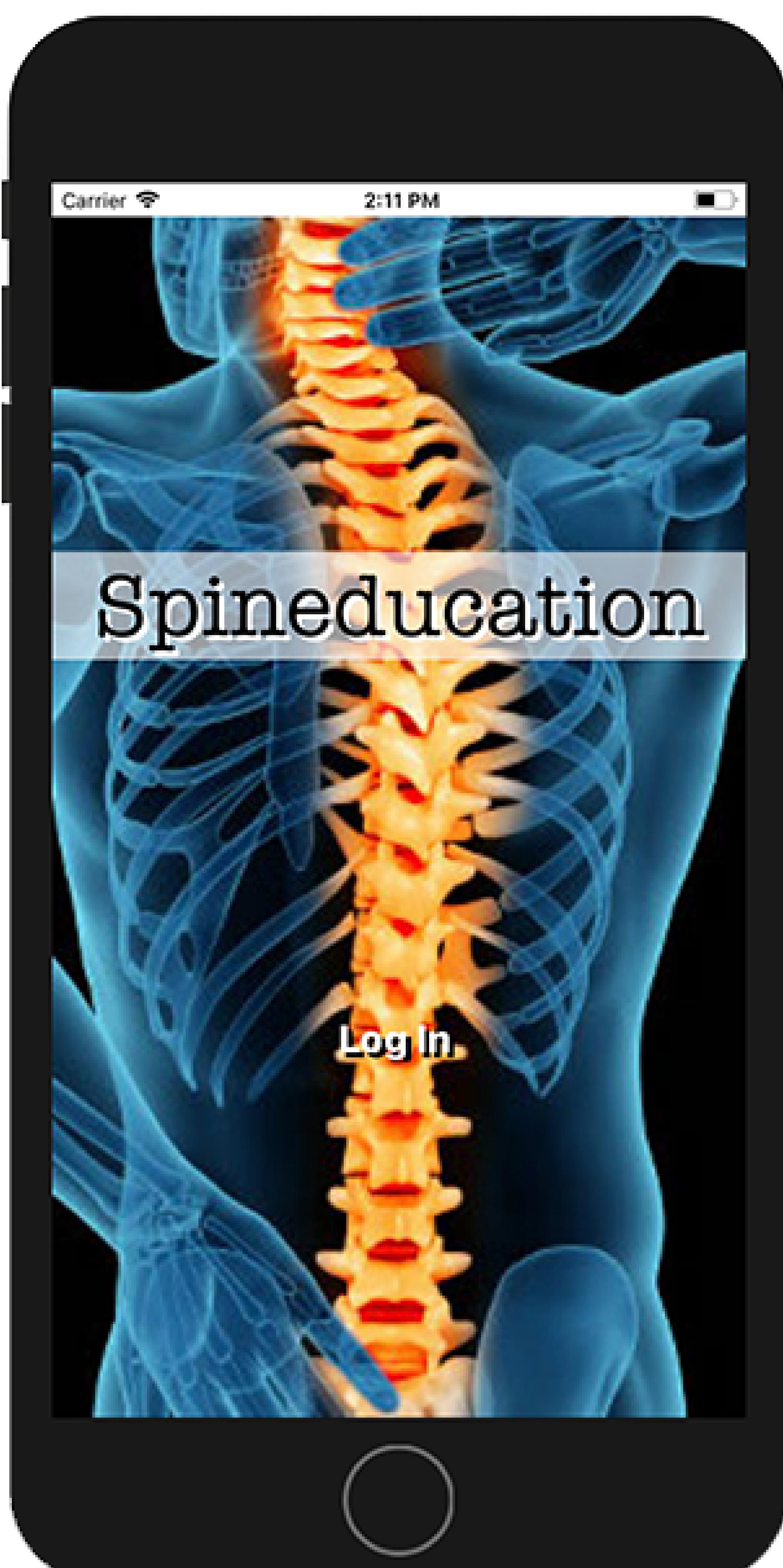
Multiple Choice Questions

The multiple choice questions quiz users on their knowledge. Users will see a question and 4 options. If the user selects the correct answer, the option will turn green. If the user selects the wrong answer, the option will turn red, and the correct answer will turn green. The user will be able to immediately learn from their mistakes.



Objectives

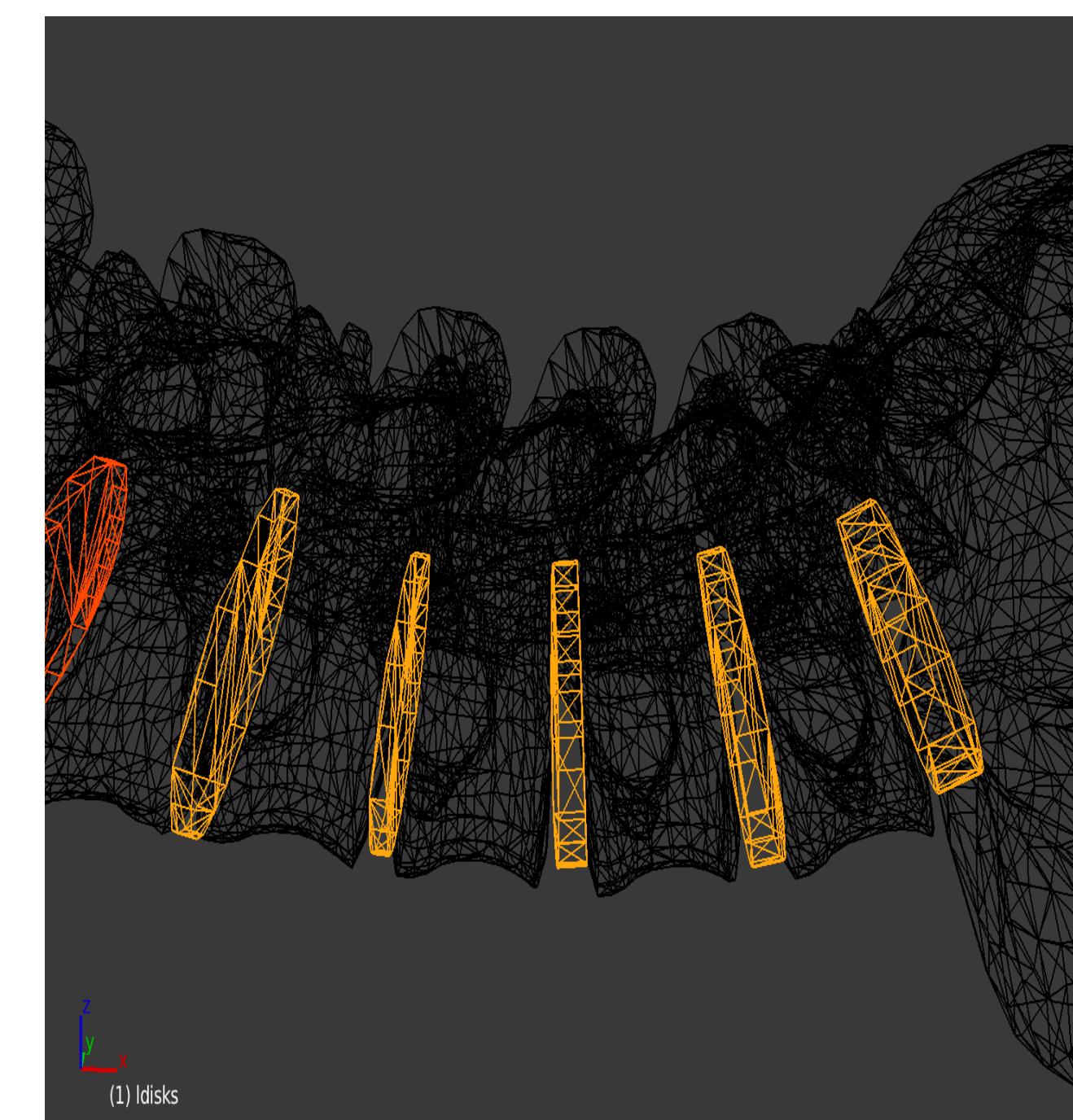
Our project aims to provide users with real clinical scenarios and multiple choice questions that help prepare students for their medical exams. Additionally, our project allows medical students to practise performing procedures inside an augmented reality environment.



Target Audience

When it comes to hands-on experience, medical students have little opportunity to practice their skills in spinal surgery due to the intricate nature; as such, the user of a medical application like ours would be provided a simulated practice experience through an augmented reality game as well as theoretical knowledge through cases and multiple choice questions.

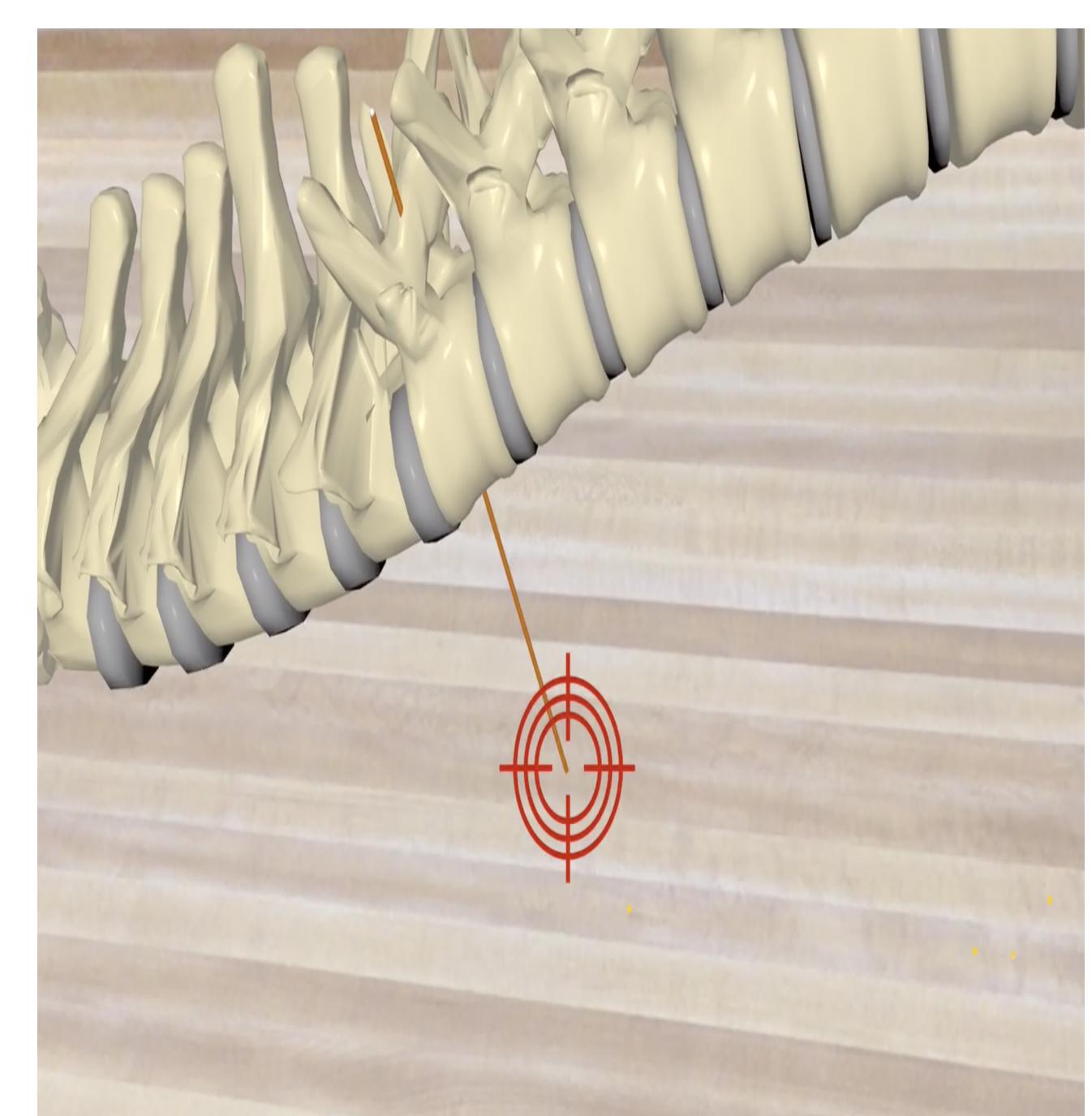
AR Surgery



The augmented reality component of the application uses blender to texture and manipulate a 3D model of the spine, helping ensure that the spine that is superimposed in the user's environment has all necessary attributes to provide the most lifelike surgical experience.

Selecting Start Points and Trajectory

In order to simulate trajectory selection, when a pedicle start point is chosen, a line from the start point to the user appears; this allows the user to move the line according to the camera angle and select a trajectory with which they place the screw into the pedicle start point on the spine.



Placement of Screws



Afterwards, the screw is placed using the selected position and by calculating the rotation angle from the camera. If the placement of the screw is within the designated pedicle start point, then the screw has been placed successfully.