



An Immersive Spatial Anatomy Learning Platform Using High-Fidelity 3D Photogrammetry, Visage Ease VP, and Apple Vision Pro

Edouard Aboian, MD, Yale School of Medicine; Kirsten Cooper, MD; Taylor Corsi, MD; Charles Duncan, MD; MingDe Lin, PhD; Stefan Schenke, PhD; William Stewart, MD; YE Xu, PhD; Saeed Juggan

Briefly describe what attendees will see during your demo.

Can experience radiology and anatomy 3D model and correlate points of interest between anatomy and radiology model

Problem & Motivation: What clinical or operational problem does your MVP address?

Understanding complex three-dimensional anatomy remains a fundamental challenge in surgical and radiologic education. Although cadaveric dissection remains the educational gold standard, opportunities for repeated, interactive exploration of anatomy are limited. To address this need, we developed an immersive spatial anatomy learning platform that combines high-fidelity 3D photogrammetric cadaver models with Visage Ease VP on Apple Vision Pro (AVP). The platform enables learners to interact with life-sized, anatomically accurate models in mixed reality, offering an intuitive, collaborative learning experience that complements traditional anatomy instruction.

What You Built: Describe your MVP, tool, or workflow in plain language

This interdisciplinary collaboration brought together vascular surgery, radiology, anatomy education, and advanced medical visualization technologies to create an immersive anatomy learning environment. High-resolution photogrammetric models of cadaveric abdominal and pelvic dissections were integrated into Visage Ease VP, enabling users wearing Apple Vision Pro to explore anatomy in three dimensions. Learners can inspect structures and points of interest from any perspective, appreciate complex spatial relationships, and interact collaboratively with realistic anatomical models beyond the limitations of conventional two-dimensional educational resources.

Tech Stack & Development Approach: What tools, frameworks, or methods did you use to build it?

The platform leverages commercially available Apple Vision Pro hardware together with Visage Ease VP and institutionally developed photogrammetric models, making it readily adaptable for anatomy education, radiology training, surgical education, procedural planning, multidisciplinary conferences, and future patient education. The workflow is scalable and establishes a practical foundation for integrating immersive visualization into routine medical education and clinical practice while supporting future AI-enabled visualization applications.

Validation & Evidence: Have you done any informal testing or validation? If so, what did you find?

During the 2025–2026 academic year, first-year medical students voluntarily participated in two 45-minute immersive anatomy sessions focused on abdominal and pelvic anatomy. Participants completed standardized

Likert questionnaires assessing usability, immersion, educational value, confidence in identifying anatomical structures, and overall learning experience. Nineteen students participated in the abdominal sessions and fourteen in the pelvic sessions. After the abdominal sessions, 100% of participants agreed or strongly agreed that the platform was easy to use, that the photogrammetric models were clear and detailed, and that the immersive experience was engaging. Nearly all students strongly recommended incorporating the sessions into future anatomy instruction. Participants in the pelvic sessions reported similarly positive experiences. Qualitative feedback consistently highlighted the realism of the models, intuitive interaction, improved understanding of complex three-dimensional anatomy, and only minor ergonomic limitations associated with prolonged headset use.

Feedback You're Seeking: What specific feedback, help, or collaboration are you hoping to get from the CAIMI26 community?

Expansion of this tool to other institutions. Overall feedback on usability, utility and potential for integration into curriculum.

Known Limitations & Honest Failures: What isn't working yet, or what have you already tried that failed?

The system needs further fine tuning and collaborative mode to enhance utility

Potential for Impact: If this MVP were fully developed and deployed, who would benefit and how?

Medical students, radiology residents, surgical residents, surgeons trying to understand anatomy in less familiar anatomic regions.

GitHub Repo:

<https://cloud.visageimaging.com/index.php/s/57r1ZoJEMUfeaFB>