

ACS 2024 Surgeons and Engineers: A Dialogue on Surgical Simulation Meeting

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Research-In-Progress

Discovering the Brainstem: An Interactive Web-Based Atlas

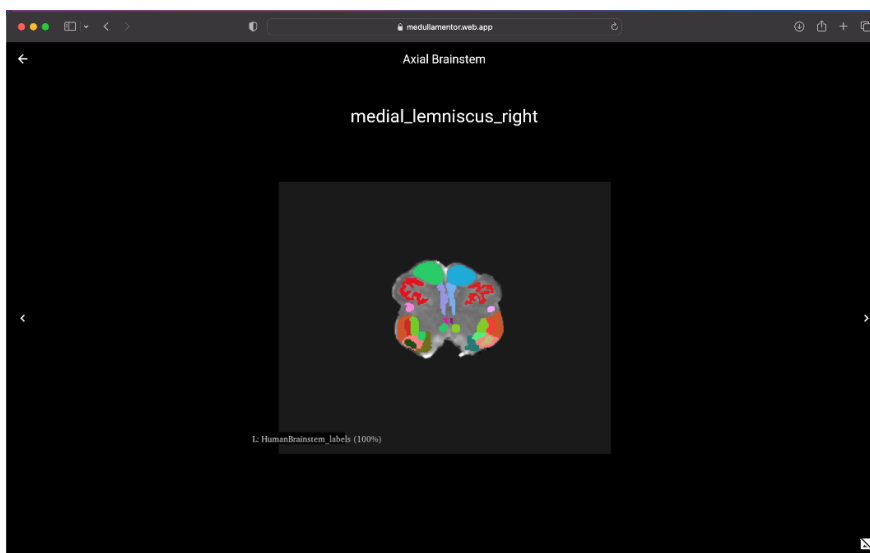
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Introduction: Brainstem anatomy is an integral part of medical education, where it aids in understanding clinical presentations and the pathophysiology of neurological disease. Despite advances in digital anatomy resources, current methods for learning the brainstem rely largely on flashcards and outdated histology slide websites. We introduce MedullaMentor as a free-to-use, interactive website for students to learn brainstem anatomy in a modern digital environment.

Methods: A brainstem atlas was sourced from the Duke Center for in Vivo Microscopy under the Creative Commons CC By-NC-SA 3.0 license. Images of the brainstem were organized into axial, coronal, and sagittal views using the 3DSlicer program. Multi-color labels overlay the raw anatomy to highlight important structures. For each view, a total of 30 slices were created. The Flutter Software Development Kit compiles these images into a user-friendly, interactive website.

Preliminary Results: MedullaMentor is hosted at <http://medullamentor.web.app>, where users can choose from axial, coronal, and sagittal slices of the brainstem. Controls for slice scrolling and toggling labels allow users to interact with the atlas in real time. Whenever a user hovers over a structure of interest, the corresponding label is displayed at the top of the screen.



Next Steps: MedullaMentor represents a digital upgrade to brainstem anatomy teaching resources, allowing users to view and interact with a brainstem atlas purely within their web browser. While useful in its current state, MedullaMentor is in an early development stage. Future steps include mobile device optimization, an interactive quizzing/exam tool, and displaying 3D volumetric representations of the atlas.