HUMAN VISUALIZATION PROJECT: MODELS FOR GROSS ANATOMY

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The goal of the Human Visualization Project is to create interactive 3d materials for learning environments. The lack of freely available anatomical content, coupled with the lack of a standard platform, has limited access to potentially enriching interactive models into the classroom. Therefore, we decided to create new materials designed specifically for this purpose. The 3d human skeleton (developed last year) has been improved by adding the nervous system, consisting of peripheral and central nervous system components, along with a completed skull, associated skin, and dermatome pattern. The addition of these elements will enable teachers and learners to trace impulses along motor and sensory pathways that connect the skin to spinal cord and brain. Major peripheral nerve plexuses were created starting from the brachial plexus then expanding into cervical, lumbar, and sacral plexuses to include distribution to parts of the upper extremity, torso, and lower limbs. Furthermore, the skull has been developed into a higher level of anatomical complexity to include foramina, complete inner braincase surface, and detachable top of the skull (calvarium). These features will allow students to more readily follow the path of nerve impulses as they travel through bony structures into the spinal cord and brain. Additionally, a dermatome map was applied to the 3D model of the skin. A dermatome is a patch of skin which is supplied with nerve fibers from dorsal spinal roots. Each portion of skin is influenced by a specific nerve. The creation of accurate dermatomes was achieved by generating complex UV maps. UV mapping is a process which takes place in Maya in which the surface of a 3D object is laid out in a 2D format, and complex texture and graphics are projected. The Human Skeletal 3D model in PDF form will enable easy distribution and universal access to this content for students and educators without requiring the installation of complex 3D modeling programs.