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CS6460 – Educational Technology
Assignment 4

My previous assignment was transitional, in that my previous project ideas for this class were shelved in favor of new ideas as I had formed a team with students who are members of both CS6440 and CS6460. At the time, we did not have a concrete project idea and were essentially exploring anew. For this assignment, I will focus on the project idea we have selected and received approval for from both classes: A visual tool to educate on human anatomy and diseases meeting Health Information Technology (HIT) Data Standard requirements.

Problem to Solve

The aim of this tool is to provide end users, either private individuals or medical students, with a way to visualize and learn how the human body works and how different conditions and diseases change the body, where they can see how they affect portions of the body or the whole body. The tool's representations, labels, and relationships will follow key Data Standards in HIT (SNOMED Objectives and Results, 2017) to make it straightforward for users worldwide to understand medical terminology as used by healthcare practitioners globally. This interoperability allows this tool to be more than only a tool to learn human anatomy, but also allow it to become a way for users to learn and become accustomed to terminology and jargon already in use in the medical field.

The key learning methodology in this tool is Simulation Learning. Our goal is to allow users to explore the human anatomy and change specific variables, so they can control and see how a disease advances. As an example, a user could focus on a view of the liver in healthy condition. Through a toolbox, they could tweak variables, such as exposure to different amounts of sugar, fats, or alcohols, and see how these change the status of the liver as it enters diseased conditions.

Competing Products

Today, the majority of products focus on 3D visualization of the human anatomy only. Several products have existed in this space since the 1990s and many have today transitioned their tools to leverage Android or iOS for mobile use or, more recently, to formats apt for use with VR headsets. Some examples are listed below:

- **Visible Body** (Visible Body, 2017) includes desktop and mobile versions of their tools.
- **TeachMeAnatomy.info** (TeachMeAnatomy, 2017) a human anatomy-specific learning tool part of TeachMeSeries, a collection of educational healthcare resources.
- **3DOrganon** (3DOrganon, (2017) includes a VR compatible version of their product.
- **Anatomography BodyParts3D Project** (BodyParts3D Information, 2016, January), an open source project owned by the Database Center for Life Science, a non-profit research institute from the Univeristy of Tokyo, with the aim of making human anatomy education open and free.

One existing product, created by **BioDigital**, does focus in the modeling of conditions and diseases in addition to modeling human anatomy. Their database includes visualization for many diseases, such as different types of cancer, heart failure and cardiovascular diseases, and other organ diseases (About BioDigital, 2018). Many of these are in the form of short interactive animations. While very close to the scope of our project, this product does not meet some of our goals in being interoperable

with HIT Data Standards and does not have as much level of interaction as we envision with our project.

References:

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