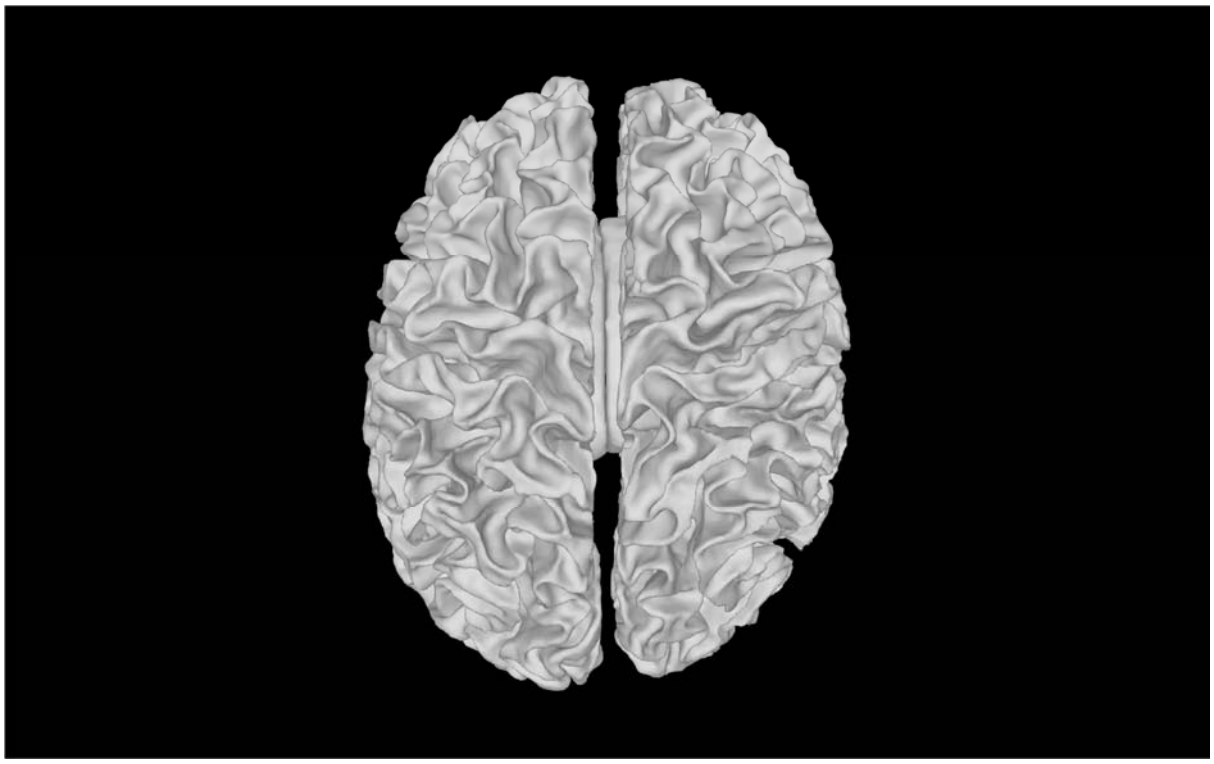
Exploring the human brain in virtual reality



Background

The human brain weighs around 1.3kg, has a volume of around 1200cm^3 and the consistency of thick porridge or tofu. It consists of many subcomponents, the most striking of which being the two intricately folded cortical lobes. The advent of brain imaging techniques such as magnetic resonance imaging has allowed detailed 3D models of the brain to be constructed, however, the teaching of brain anatomy at university level currently lags behind this. Students of brain anatomy typically have a very difficult time understanding the 3D relationship between different brain areas and structures.

One of the key reasons for this is that brain anatomy is learnt from textbooks containing 2D diagrams showing "slices" through the brain. This greatly obscures the true 3D relationship between brain areas. However, the advent of cheap commercial virtual reality headsets opens up the possibility of greatly enhancing the way in which brain anatomy can be learned and taught. For example, imagine being shrunk down in scale so that you could walk or drive across the surface of the brain like exploring the moon; being able to take apart the brain in an interactive 3D puzzle; or being able to visualise brain activity whilst standing inside the brain.

Brief

Using 3D models of brain structures from www.brainder.org you will build a fun and interactive virtual reality experience for university students to learn brain anatomy. The experience should be interactive but at the same time educational. Users should come away with knowledge of key structures of the brain and what these structures do. Other than that, the way in which you achieve this is completely up to you.

Resources

- Brainder (3D brain models): www.brainder.org
- Wikipedia human brain article (introductory article on the human brain): https://en.wikipedia.org/wiki/Human_brain
- The whole brain atlas (more detail on brain anatomy): http://www.med.harvard.edu/aanlib/home.html
- Brain facts (online text about the human brain): http://www.brainfacts.org/book

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