Short Communication
Volume 5:10, 2021

Clinical and Medical Case Reports

Open Access

A Case Report on Utilising Deep Learning to Organise the Human Visual Cortex Based on Anatomy

Digionel K Sam*

School of Nursing, Autonomous University of Tamaulipas, Mexico

Abstract

In recent years, deep learning (DL) has grown popular for medical image segmentation. Despite these advancements, DL-based segmentation still fails to solve some challenges. Some deep learning algorithms have recently made strides by including anatomical information, which is a vital cue for manual segmentation. Unlike standard medical imaging, the unstructured open surgery scenario, combined with our unconstrained configuration with accessible handheld digital cameras, makes this endeavour particularly difficult. Deep learning implementation, on the other hand, is behind in surgery. Despite the importance of visual discrimination during surgery, standardised imaging technologies are not frequently integrated into surgical processes, particularly for open surgery. Computer vision, on the other hand, presents a unique chance to aid and augment surgeons during surgery. As a result of this research, it appears that deep learning's use in medical science is now quite effective in the present period.

Keywords: Deep learning • Anatomy • Healthcare

Introduction

Human anatomy is the study of the human body's structures. An understanding of anatomy is essential for practising medicine and other health-related professions. The word "anatomy" is derived from the Greek words "Ana," which means "up," and "tome," which means "to cut." Cutting apart, or dissecting, creatures have long been a part of anatomy research. Imaging technology, on the other hand, can now teach us a lot about how the inside of a body operates, eliminating the need for dissection. The whole occipital lobe, as well as the posterior regions of the temporal and parietal lobes, makes up the visual cortex, which is responsible for vision. The secondary visual region surrounds the primary visual area, which is also known as the striate cortex, on the medial side of the occipital lobe. The position and orientation of edges, the direction and speed of movement of objects in the visual field, as well as stereoscopic depth, brightness, and colour, are all factors that contribute to visual perception. There are many less invasive examination procedures. A scientist or clinician, for example, may inject an opaque dye into the blood vessels of living animals or humans and then use imaging technologies, such as angiography, to see the vessels that contain the dye. This tells how well the circulatory system is functioning and whether any obstructions exist. MRI, CT, and PET scans, as well as X-rays, ultrasounds, and other types of imaging, can reveal what is going on inside a living body [1]. Deep learning gives the healthcare business the ability to examine data at breakneck speeds while maintaining high accuracy. It's neither machine learning nor artificial intelligence; rather, it's a sophisticated hybrid of the two that sifts through data at breakneck speed thanks to a layered mathematical design. Deep learning's advantages in healthcare are numerous - fast, efficient, and precise - but they don't end there. More advantages can be found in the neural networks created by numerous layers of AI and ML, as well as their ability to learn. Yes, the name of the game when it comes to deep learning is learning. Medical imaging solutions, chatbots that can identify patterns in patient symptoms, deep learning algorithms that can identify specific types of cancer, and imaging solutions that use deep learning to identify rare diseases or specific types of pathology are all examples of deep learning applications in healthcare. Deep learning has proven crucial in giving medical personnel with insights that enable them to detect problems early on, allowing them to provide significantly more tailored and relevant patient care. Healthcare's future has never been brighter. Deep learning in healthcare can become tremendously powerful for helping doctors and revolutionising patient care, not only because AI and ML offer the opportunity to design solutions that cater to very specific demands within the industry [2]. To avoid difficulties and improve patient outcomes, surgeons must visually identify soft-tissues, such as nerves, from surrounding anatomy. An accurate nerve segmentation and analysis tool could help surgeons make better decisions. Form and function are frequently linked, whether in a single neuron or a more complicated biological system like the human brain. The functional structure of the human visual cortex, for example, is inextricably linked to the underlying anatomy, with cortical shape serving as a useful predictor of retinotopic organisation in early visual cortex. Deep learning has the potential to advance the concept of precision surgery. Indeed, the arrival of such technology to aid a surgeon's decision-making may be just in time. Recent modifications in surgical training have resulted in residents having less time in less autonomy, resulting in a diminished ability to design their own human visual brain algorithms, according to studies [3]. DL will prepare nuclear medical personnel for quick integration, putting an end to the doomsday worries that have gripped the field. In nuclear medicine, the disruptive potential of the technology may have the largest impact on technicians and physicists rather than physicians; those of us most likely to create and deploy DL in the research and clinical context, contrary to radiologists' fears.

***Address for Correspondence:** Sam DK, School of Nursing, Autonomous University of Tamaulipas, Mexico, E-mail: sam.k-dig@gmail.com*

Received 02 October, 2021; **Accepted** 16 October, 2021; **Published** 23 October, 2021

Conclusion

Deep learning algorithms are employed in a variety of industries, including automated driving and medical equipment. The back propagation or back-prop approach is the essential mechanism for neural networks to learn about any failures in data prediction in deep learning. This approach necessitates a high level of expertise. Furthermore, because it is a new technology in medical science, more research is required.

References

1. Maier, A., Syben C, Lasser T, and Riess C. "A gentle introduction to deep learning in medical imaging processing". *Z Med Phys*. 29; (2019): 86-101.
2. Min, JK., Kwak MS, and Cha JM. "Overview of deep learning in gastrointestinal endoscopy". *Gut Liver*. 13; (2019): 388-393.
3. Shen, D., Wu G, and Suk H. "Deep learning in medical image analysis". *Annu Rev Biomed Eng*. 19; (2017): 221-248.

How to cite this article: Sam, Digionel K. "A Case Report on Utilising Deep Learning to Organise the Human Visual Cortex Based on Anatomy". *Clin Med Case Rep* 5 (2021):172.