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Could AR and VR Replace 3D Printing in Imaging Space?

Early applications of 3D printing technology in medicine have been made in the field of imaging, enabling radiology departments to be of more help to care teams by providing clinicians and surgeons with printed models of anatomical structures.

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There is a new kid on the block that is expected to rival 3D printing's ability to help clinicians visualise and touch models of tissues and organs in aid of doing surgical procedures, for example.

Augmented reality (AR) and virtual reality (VR), with the support of advanced imaging technology and fast computers, is increasingly becoming an important means to visualise and examine body structures. The advantages of tapping AR and VR for medical applications were among the topics highlighted at the recent annual meeting of the Radiology Society of North America in Chicago.

AR and VR technology can help users in three ways: visualisation; virtuality (the extent to which it blends the real world with images); and perspective generalisation (tracking capabilities that enable users to see their own perspective of the object).

However, as noted by Justin Sutherland, assistant professor in the department of radiology at the University of Ottawa, the user tools that enable AR/VR technology are still early in development. In terms of cost, experts say AR/VR eventually will be more cost-effective than producing 3D models.

Another consideration is the speed with which 3D models can be created. In contrast, AR and VR offers the promise of enabling clinicians, as well as patients, to see, examine and even manipulate body structures. Moreover, with visualisation technology, clinicians will be able to add annotations and other information to images, and to add colour segmentation to differentiate structures, according to Edward Quigley, MD, a radiologist in the department of radiology and imaging sciences for University of Utah Health.

But experts agree that there is plenty of work still to be done before AR and VR technology can be used in daily clinical practice. These include:

- Clinical grade technology is needed to support AR and VR. Current visualisation equipment primarily was designed for gaming, which may not be appropriate for medical use cases;
- Development of input tools -- those that enable the user to interact with the image and manipulate it by rotating it and resizing it to see different perspectives; and
- Clinicians will need to adapt to use the new technology.

Source: Health Data Management
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