



# 3D slicer and viewer for augmented reality

PHYSICAL SCIENCE: IT

The Challenge	Interacting with 3D immersive visualisations is challenging. While finger tracking technology is being developed, getting precise coordinates and map data points remains challenging. This is due to the fact that common 6DOF controllers do not support lower degrees of freedom constraints - e.g. it is impossible to move precisely/absolutely only along an X, Y or Z axis of the 3D space. Therefore, it is hard to select precise areas/plans/points (e.g. a small tumour within an organ, or a point within a point cloud). It is also difficult to work within these areas at high precision.
The Solution	Our new 3D slicer-viewer mouse provides for improved precise interaction between the physical world and augmented reality.
Key benefits	<ul style="list-style-type: none"> <li>• Physical controls over virtual visualisation for precise interaction</li> <li>• Coupling physical and virtual actions</li> <li>• Reactive mapping of mid-air gestures on physical controller</li> <li>• Easy-to-use motorised controls the 3D slicer-viewer</li> </ul>
Development Stage	Proof of Concept completed.
Brief Description & Differentiation	<p>The 3D slicer-viewer is a physical controller that allows precise interaction with 3D models, using an augmented reality head-mounted display (see Figure). There are two physical sliders on each of the three axes of the controller. The sliders allow users to move along the X, Y and Z axes with precision. Users can select a point/plane/volume in the visualisation with tangible control.</p> <p>The Fader Axes system has the potential to enhance the visualization, for example ease of analysis of medical images such as MRI and CT scans. Using a Meta 2 headset, a practitioner can visualise a 3D MRI of a patient's head from their desk. Using the sliders, the practitioner can select slices of interest of the MRI (e.g. a volume containing a tumour) and save them to view later for further analysis on a traditional computer.</p> <p>Other potential target markets/applications for the new technology include: 3D research market; CAD; games development, and engineering.</p>
Research Team	Led by Dr Max Cordeil (Department of Human Centred Computing, Faculty of IT).
Intellectual Property	National patent applications filed (USA and Australia).

