

# Augmented and Virtual Reality Utilization to Support Geospatial Learning

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## Abstract

Geospatial programs face a number of difficulties in educational instruction. These include: equipment costs; distance education; accreditation compliance; faculty limitations; and visualization of equipment and concepts.

This particular set of problems can be addressed using a range of technologies that can be grouped as augmented reality and virtual reality tools (AR/VR). While these tools will not provide complete solutions, they will allow programs to get closer to workable solutions than we have now. They can support more immersive and engaged learning in distance mode, as well as provide an improved learning experience in more face-to-face settings.

Augmented reality is starting to appear in some geospatial applications (e.g., Burczyk, 2018) and IDC expect significant growth in AR/VR in many regions of the world, especially in China (IDC, 2018).

The technology can help instructors by providing other paths for instruction using different learning modalities. If an approach to learning involves 'Doing, Talking, Reading, Writing and Visualizing,' then AR/VR provides a significant capability in the Visualizing part of the approach. The visualization can be done by the instructor or the student, as well as being part of the student expressing what they have learned.

In this paper we will outline our progress in this endeavor, as well as providing some guidance for others to undertake similar work.

## References

- Burczyk, D., 2018. A New Reality for Geospatial Professionals. *GIM International*.  
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- IDC, 2018. "IDC Expects Asia/Pacific (excluding Japan) Augmented and Virtual Reality Spending to Reach USD 11.1 Billion in 2018." Press Release, International Data Corporation. <https://www.idc.com/getdoc.jsp?containerId=prAP43848718>