

3 DIMENSIONAL SCENE RECONSTRUCTION AND ANIMATION USING VRML/X3D

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Research results are typically reported using 2-dimensional methods that include tables, figures, and charts. With the availability of 3-dimensional (3D) visualization applications, such as the Virtual Reality Modeling Language (VRML) and Extensible 3D (X3D) graphics, alternative methods of information presentation and display are becoming more common. Moreover, these 3D applications can be displayed with viewer software on conventional Internet web-browsers (e.g., Netscape and MS Explorer) with many viewers free and available for download on the Internet. These applications may be used effectively in oral presentations and for separate viewing on the Internet. The Naval Research Laboratory has created visualizations with VRML and X3D to expand and enhance its reporting; this paper describes applications that were developed to visualize naval amphibious assault vehicle (AAV) navigation performances during field demonstrations. Each visualization depicts a beach and ocean scenario and uses actual track data, recorded as a series of latitude and longitude points, to animate a 3D AAV model as it navigates through a planned course. The 3D AAV model can be viewed separately to convey the physical and visual constraints of the vehicle driver and manipulated (e.g., rotated or moveable parts adjusted) and studied for familiarization purposes. This paper will address the methods used for scene reconstruction and AAV animation in these 3D visualizations.