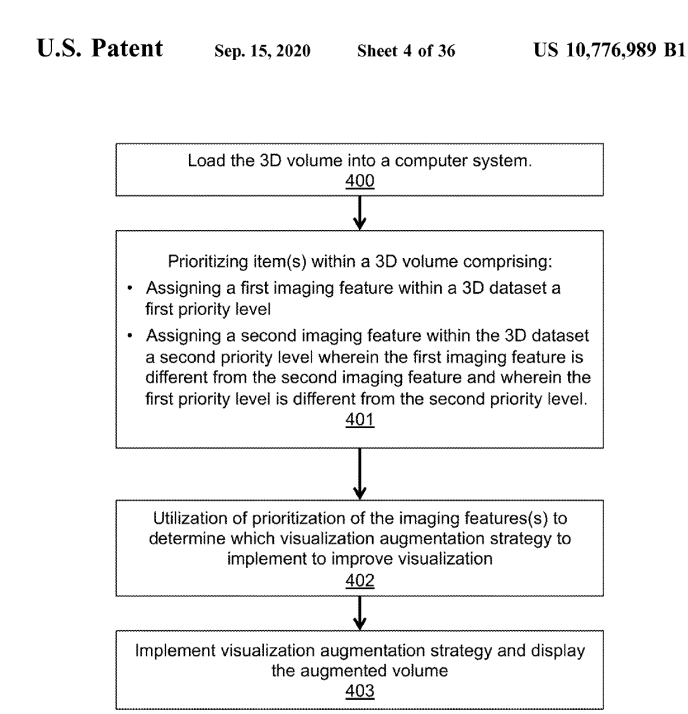
A Tenth Major Improvement to the Integrated Visual Augmentation System

To provide Soldiers with the ability to see through walls in urban warfare

USA, July 26, 2023 /EINPresswire.com/ -- In the 24 July 2023 press release, TPMI discussed its '485 patented 3D hazard tracking system to achieve overmatch in Urban warfare. This novel system utilizes a drone-placed pseudo-GPS system on an uncharted building and integrates sensor data from multiple IVAS to characterize objects and plot them on a novel 3D map.



To provide Soldiers with the ability to see through walls in urban warfare

This revolutionary technology provides the Soldier a real-time, 3D map of each hazard (e.g., enemy forces, weapons, bombs, booby traps, etc.), within the uncharted building. Consider a squad leader and his 8 Soldiers wearing their upgraded IVAS systems moving through the rooms and continuously collecting data from the sensor systems.

A set of classifications of the imaged objects will emerge, such as classification based on probability of hazard ("definite hazard", "possible hazard" or "non-hazard"), type ("gun", "bomb", etc.), severity ("mild", "moderate" or "severe") and mobility ("fixed" or "mobile"). Non-hazards can also be classified. For example, some non-hazards such as a door or a wall are important for Soldier movement. Other non-hazards can be classified in terms of usefulness (e.g., "documents that could be useful for the intelligence community").

As a Soldier moves through a room, dozens of objects can be classified. Collectively, the number of objects classified in the uncharted building can amass to hundreds or even thousands of different objects, all converted to virtual objects placed on the novel 3D map. Mentally and physically, a Soldier is already strained to the max. Information overload is a real problem. So,

how do you effectively present this important data to the Soldier?

In US Patent 10,776,989, TPMI patented a method, which solved this exact problem. Rather than traditional 3D rendering technology which displays near items with far items hidden behind, TPMI developed a method called "prioritized volume rendering", which comprises a prioritization scheme that will 3D render items deemed higher priority, and display those high priority items even if they are located behind a wall or door. This novel approach is absolutely critical for the Soldier in the uncharted building.

Consider the scenario. A Soldier turns a corner and has a near miss with a hidden booby trap. The Soldier's IVAS system images the booby trap. The off-site imaging experts classify it as a hazard. As subsequent Soldiers approach, TPMI's prioritized volume rendering kicks in. Rather than rendering the wall which is in front, a rendered image with a hole in the wall will be displayed on an upgraded IVAS. And through this hole, subsequent Soldiers will be able to see a virtual object corresponding to the booby trap before they turn a corner.

As Soldiers move through the building, the '989 prioritized volume rendering system will constantly be selectively displaying the objects deemed high priority through its novel rendering strategy. TPMI's strategic use of non-transparent, partially-transparent and fully-transparent techniques is critical to effectively displaying high priority items to the Soldier. Such techniques will alert the Soldiers of key hazards and mitigate the problem of information overload yielding increased Soldier lethality and Soldier survivability.

The words "Visual Augmentation" in the Integrated Visual Augmentation System (IVAS) are at the heart of TPMI's patented technology. TPMI aims to work with the PEO Soldier program to integrate its revolutionary technology into an upgraded IVAS to result in a superior system.

About the author: Dr. Robert Douglas is a West Point graduate who: fought as an Infantryman in Vietnam with US units and a Vietnam recon company; worked in a combat development agency; studied nuclear war in the Joint Chiefs of Staff; patrolled in the desert for the UN in the Middle East with Russian war planners; and developed a system to assist Air Force space exercises. After leaving the service he spent over three decades in the defense industry rising from manager to vice president working programs ranging from sensors and missiles for Air Force aircraft to rubbing shoulders with Army scientists; to Army helicopters and combat vehicles as well as rapid target acquisition (RTA), night vision goggles and helmets sights.

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