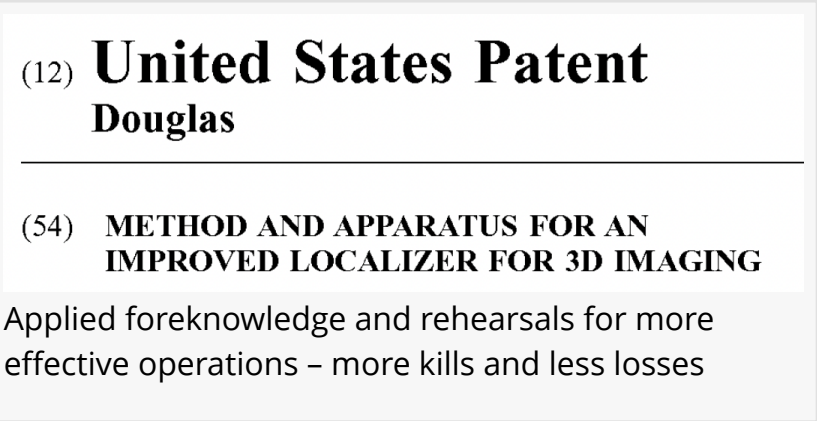
A Nineteenth Major Improvement to the Integrated Visual Augmentation System

Applied foreknowledge and rehearsals for more effective operations – more kills and less losses


(12) **United States Patent**
Douglas

(54) **METHOD AND APPARATUS FOR AN IMPROVED LOCALIZER FOR 3D IMAGING**

Applied foreknowledge and rehearsals for more effective operations – more kills and less losses

USA, August 8, 2023 / EINPresswire.com/ -- TPMI is dedicated to improving several aspects of the Integrated Visual Augmentation System (IVAS) to make it a major success.

Consider a scenario wherein an Infantry squad was passing through a small village in disputed territory. A dirt road goes through the village with buildings on either side of the road. A small market place is in the center with an open field where kids could play soccer. As the squad passes through the village, the squad leader has one fire team focus on buildings on the left side of the road and the other team focus on the right side. Enhanced knowledge of the small village would maximize the effectiveness for small Infantry units, but how could this be achieved?

As discussed in an article published by TPMI on 29 June 2023, a major improvement would be to incorporate a LIDAR system onto the IVAS (US Patent 11,006,100). With this upgrade, a 3D dataset could be generated from the Soldier's perspective at ground level at multiple time points. For example, a first time point could be when a Soldier is walking through this village and focusing on a first set of objects (e.g., buildings, people, vehicles, etc.). A second time point could be at a different location in the village while he is focusing on different objects. And, a third time point could be when he was about to pass the buildings he was looking back and seeing the various objects from different angles. Each 3D dataset would have valuable information including the precise geo-location of objects.

Object tracking is critical for threat assessment; however, there can be thousands of objects characterized on a pass through town. It is difficult to localize where an object went from a 3D dataset at a first time point to a 3D dataset at a second time point. In US 10,959,696, TPMI has patented technology for a precision localization of objects over multiple time points. This technology would allow rapid analysis of where an object has moved over time -- critical for threat assessment.

Additionally, the squad would collectively have a mapping of the village and activities of the outdoors and population at the time of recording when the squad passes through the village. This could be considered the ‘norms’ for that time and a normative database for the village could be established. When this process is repeated for various villages, 'norms' for for the area of operations (AO) could be derived.

Incorporating LIDAR onto the IVAS via TPMI's '100 patent would be critical in generating a normative database, which is invaluable for two reasons. First, the foreknowledge of the village structure and normal city would aid in planning and rehearsing operations. Second, an artificial intelligence (AI) could compare real-time data to the normative database to predict threats.

With the '100 patent and the '696 patent, enhanced knowledge of the AO would maximize the effectiveness for small Infantry units via object localization, squad rehearsal and threat prediction. The application of the above capabilities is a ‘must do’. TPMI aims to work with PEO Soldier and other industry partners to enhance the IVAS system by integrating these novel technologies into the IVAS 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, night vision goggles and weapon sights.

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