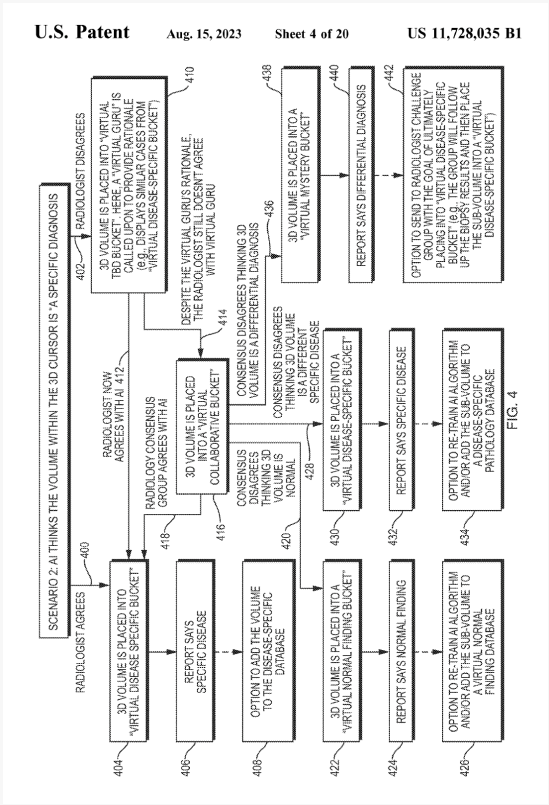
A 27th Major Improvement to the Integrated Visual Augmentation System

Applying Artificial Intelligence to a subvolume within the One World Terrain to improve the US Army's strategy



Applying Artificial Intelligence to a subvolume within the One World Terrain to improve the US Army's strategy

USA, September 15, 2023 /EINPresswire.com/ -- Consider a situation wherein the G2/ S2 (intelligence) at a higher headquarters had an indication that a threat element had moved into your area of operations (AO). Your mission is to locate the threat element and take it out with minimal collateral damage. Fortunately, the procedures outlined in TPMI's US Patent 11,728,035, which enables artificial intelligence (AI) to be performed to a selected subvolume within a larger volume, can be evoked to help solve this challenge. Let me explain.

First, the unit S3 (operations officer) would need to select the portion of the One World Terrain (OWT) relevant to his/ her AO. The S3 could then don his/ her IVAS and carefully inspect the area for potential villages where the threat unit may be setting up operations. Drones would be dispatched to each of areas to re-map the area and provide day and night 3D imagery.

Then, the S2 wearing his/ her IVAS updated with the '035 Patent performs an analysis of the threat. The S2 selects subvolumes, which in this case are selected villages or areas, and the '035 patent performs AI within the selected subvolume in conjunction with the S2's threat activity checklist. TPMI has a wide range of patented techniques on subvolume isolation and selection, including defining the boundary using a tangible tool per TPMI's '071 patent. The checklist could include activity around the marketplace, location(s) of any radio intercepts, unusual nighttime activity, and more than normal vehicles being present. The S2 could also use TPMI's US 10,959,696 discussed in an 8 August 2023 article for change detection (e.g., analyze whether or not there are new structures in the most recent imagery or whether any disturbed earth is detected).

Judgement would be applied in conjunction with the staff and commander and, say, a particular

village was selected as the most likely threat location and an air assault planned. Per the ‘035 Patent, AI could be applied to a segmented subvolume within the 3D OWT to select an optimized landing zone (LZ) meeting important criteria such as minimum size, devoid of obstacles such as power lines, and slope not greater than 15%.

Next, given that multiple units would be involved, a route from each segment LZ to the village would be planned by the S3. Segments and their associated routes of approach could be evaluated by AI and ranked as and ranked as good, fair, difficult, dangerous in accordance with ‘035 procedures. Routes of approach to the selected village within the OWT can be marked using a tangible tool in accordance with TPMI's '071 patent. Timing of the operation could be planned using the '035 patent's subvolume based AI approach to estimate the time to traverse the route based on distance from the LZ to the village and difficulty of the terrain. Once the LZ has been selected and the route and timing of approach planned, it is critical to get all participants on the same sheet of music. TPMI's US Patent 11,574,435 provides a vital, multi-user rendering strategy to improve understanding of all participants.

In today's battlefield, the amount of sensor data collected is becoming absolutely overwhelming. It is critical that the US Army maximize understanding of the vast data and strategically apply AI. The '035 patent provides a practical solution to improve understanding and analysis of vast battlefield sensor data by selecting sub-volumes and tailoring AI to the selected sub-volume. Integrating TPMI's ‘035, '133, '071 and '435 patented technologies into the IVAS is an important step towards enabling Army personnel to have the ability to interact with the OWT in unit, combined arms, joint, and multinational training and operations. TPMI aims to work with PEO Soldier and PEO STRI to integrate these novel technologies into the IVAS.

About the author: Dr. Robert Douglas is one of the few known retired Infantrymen who have 80+ USPTO awarded patents. This article discusses only a small subset of the vast array of technologies in the above patents. This was the 27th patent discussed in this series of articles that is relevant toward improving the military/ IVAS goggles. Although only one concept is selected from each patent for the associated article, in fact, each patent includes many relevant concepts. More to come on Artificial Intelligence (AI), Augmented Reality (AR), Mixed Reality (MR), and Virtual Reality (VR).

Dr. Robert Douglas
TPMI
email us here