

A 22nd Major Improvement to the Integrated Visual Augmentation System

A 3D virtual hand to improve a Soldier's ability to perform hands-on tasks with complex military equipment.

USA, August 18, 2023 /EINPresswire.com/ -- Every Soldier's career begins with "boot camp" where a Soldier faces a collection of challenges. One of the tasks in boot camp is shooting a rifle and taking apart a rifle. Questions like "where does this part go?" and "how am I supposed to hold this thing?" enter the mind of every recruit.

As Soldier's career goes on, he or she is responsible for learning a large number of highly diverse hands-on tasks and precisely executing them. Consider two challenges the US Army faces regarding Soldiers performing hands-on tasks.

Consider the first challenge. A Soldier is faced with setting up an MK-47 Striker 40 mm automatic grenade launcher equipped with a fire-control system. The questions "where does this part go?" and "how am I supposed to hold this thing?" often re-enter the mind of the Soldier.

Consider the second challenge. Proper hand placement and finger movement are known to be important for injury prevention. Improper techniques can result in a range of injuries that can occur while operating military equipment. Injuries such as fractures, sprains or contusions can remove Soldiers from the fight entirely and negatively impact military readiness. Unfortunately, amputations, permanent disabilities and even death can occur as a result of improper techniques.

[TPMI](#) is relentlessly pursuing technology to help our Soldiers. In US Patent 11,285,674, TPMI has developed a 3D virtual hand to be displayed on an Augmented Reality headset wherein the 3D virtual hand is spatially registered to an object in the scene at pre-determined locations. The 3D

U.S. PatentMar. 29, 2022Sheet 11 of 24US 11,285,674 B1

ASSIGNING REGISTRATION POINTS AND PROGRAMMED INSTRUCTION SEQUENCE OF A 3D VIRTUAL HAND TO A TANGIBLE OBJECT

Fig. 11A

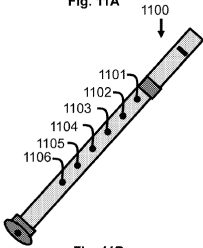
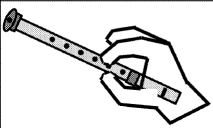
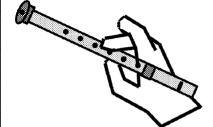


Fig. 11B

Time point	Registration point and 3D virtual hand gesture	Gesture of 3D virtual hand
1	3D virtual hand forms a gesture with index finger positioned over registration point 1102 in Figure 11A	
2	3D virtual hand forms a gesture with middle finger positioned over registration point 1103 in Figure 11A	

A 3D virtual hand to improve a Soldier's ability to perform hands-on tasks with complex military equipment.

virtual hand is also programmed to perform specialized hand and finger movements along the object with proper alignment with the object no matter what the object's orientation is.

If the [IVAS](#) is upgraded with the '674 patented technology, the Soldier can place his hand over the virtual hand and superimpose his fingers over the virtual fingers to achieve correct hand and finger positioning onto the tangible object. This technological breakthrough provides an important use case for the 120,000 IVAS systems scheduled to be delivered to the US Army.

For the Soldier working on the MK-47 Striker, the virtual hand displayed on an upgraded IVAS will help answer both "where does this part go?" and "how am I supposed to hold this thing?". By mimicking the movements of the 3D virtual hand, the Soldier could accomplish the task with minimal to no verbal instructions. Instant visual instruction via the virtual hand will yield a faster set up of weapon systems and directly improve the lethality of the force.

Not only will the virtual hand help the Soldier learn new tasks and re-learn old tasks, but the virtual hand can also help the Soldier practice proper form, which can lead to safer operations, less injuries, and improved readiness of the force.

TPMI's artificial intelligence platform could, with [PEO Soldier's](#) concurrence, include record imagery of some of the Army's most experienced and safest operators as training data for its artificial intelligence platform. This will enable the virtual hand's position and movements to be modeled from experts. Whether the task is disarming an IED, setting up a drone, or working on an engine, TPMI's virtual hand presented on an upgraded IVAS can provide expert guidance to the Soldier.

If the 120,000 IVAS systems are upgraded with the '674 patented technology, Soldiers could have immediate skilled interaction with complex military equipment, even equipment the Soldier has never seen before and never worked on before. TPMI has generated a set of technological advancements, which, if integrated into the IVAS, will maximize Soldier lethality and improve military readiness. 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 PEO Soldier to integrate this novel technology into the IVAS.

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.

Dr. Robert Douglas

TPMI

[email us here](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/650596691>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2023 Newsmatics Inc. All Right Reserved.