ASSIGNMENT 1.2 - WRSPM PROPOSAL

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1. PROPOSED TOPIC

An augmented reality-based expert system that analyzes and identifies potential hostiles (OPFOR) based on national identity, military / paramilitary equipment, and weaponry type using shape detection, body scanning, and cross-checking of collected field data from an internal database.

2. VISUALIZATION OF CONCEPT

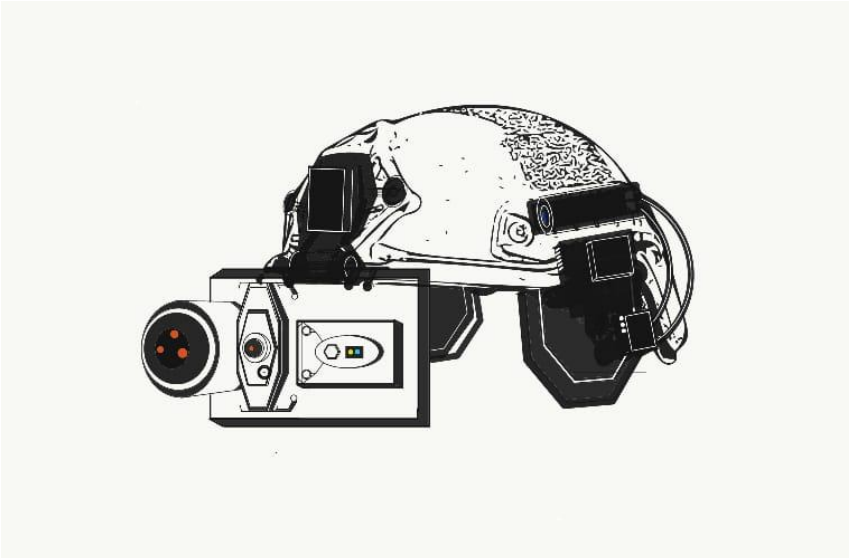

FIGURE 1.1 : ARES module mounted on an OpsCore FAST SF helmet

3.1. WRSPM MODEL [domain]

VISIBILITY	LEGEND
World	- Target must be military personnel / combatant from an given country - Target must be carrying equipments or weaponry
Requirement	- System will ask for the user to search for potential targets - System will perform a full body scan on LIVE image or video - System will display / output information regarding national identity, equipment and weaponry type, and corresponding threat level of target - System can give an option to tag and track targets based on geolocation
Specification	- Users must utilize the center cursor field to set a target for scanning in the form of a simple GUI in HUD format - System will process and output data to floating information near the target or color-coded shapes (threat = hostile ? RED : YELLOW) - System will provide an option to track target's movements and position, confirmed or denied based on physical / hardware CTA buttons - Confirmed? System will utilize an IR laser to "paint" target outline and position, and connect to CENTCOM military network for GPS submodule
Program	- The system must contain a local database regarding various weaponry types and military equipment based on national origin (Armed Forces) - The system must contain a GUI as a constant heads-up display (HUD) - The system must contain and utilize deep-learning algorithms' to execute intended field operations
Machine	- The system will be composed of these hardware: - Raspberry Pi4 programmable computer (SD card memory), lithium-ion battery, IR laser optics, touchscreen sensor, GPS system - The system will contain an OLED display to receive and output data

3.2. WRSPM MODEL [variables]

CONTROL	LEGEND

E_h	- Users
	  - Friendly military personnel (BLUEFOR)
	  - Civilians; non-hostiles, allied paramilitary units

E_v	- Opposing forces (OPFOR)
	  - Enemy military personnel
	  - Paramilitary combatants
	- User inputs, machine output
	- IR laser

S_v	- Hardware
	  - Physical buttons, main chassis
	  - Laser optics, sensor module, focal lenses
	  - MicroSD card, GPS submodule, lithium-ion battery
	- Graphical user-interface (GUI) | heads-up display (HUD)

S_h	- Local storage / database - Deep-learning models - Embedded systems - Programmable computer (Raspberry Pi4)