

ASSIGNMENT 1.2 - WRSPM PROPOSAL

GROUP MEMBERS :

- Mohammed Fachry Dwi Handoko | 5025201159
- / TBA

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

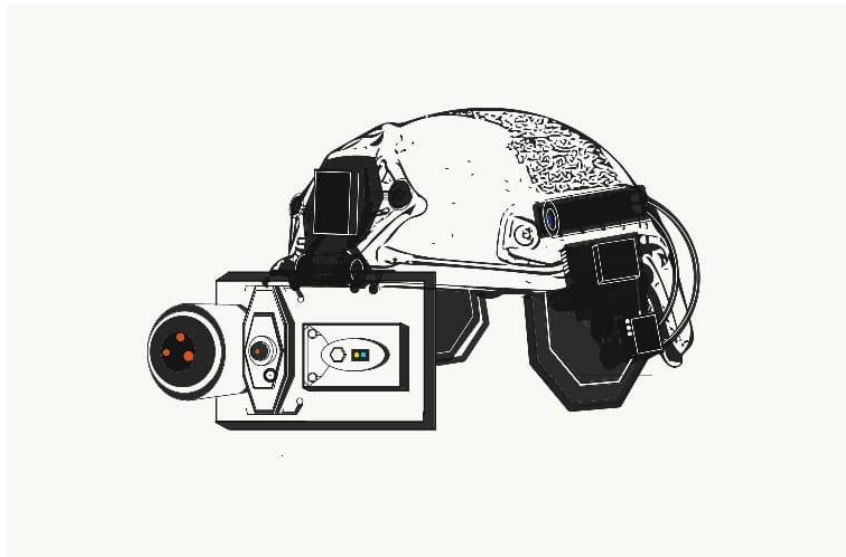


FIGURE 1.1 : ARES module mounted on an OpsCore FAST SF helmet

3.1. WRSPM MODEL [domain]

VISIBILITY	LEGEND
World	<ul style="list-style-type: none">- Target must be military personnel / combatant from an given country- Target must be carrying equipments or weaponry
Requirement	<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- The system will be composed of these hardware:<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- Users<ul style="list-style-type: none">- Friendly military personnel (BLUEFOR)- Civilians; non-hostiles, allied paramilitary units
E_v	<ul style="list-style-type: none">- Opposing forces (OPFOR)<ul style="list-style-type: none">- Enemy military personnel- Paramilitary combatants- User inputs, machine output- IR laser
S_v	<ul style="list-style-type: none">- Hardware<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- Local storage / database- Deep-learning models- Embedded systems- Programmable computer (Raspberry Pi4)