Juxtopia® CAMMRAD Medic CBRN

An Artificial Intelligent enabled Wearable Augmented Reality E-Trainer for Combat Medic Prolonged Care of CBRN Injuries

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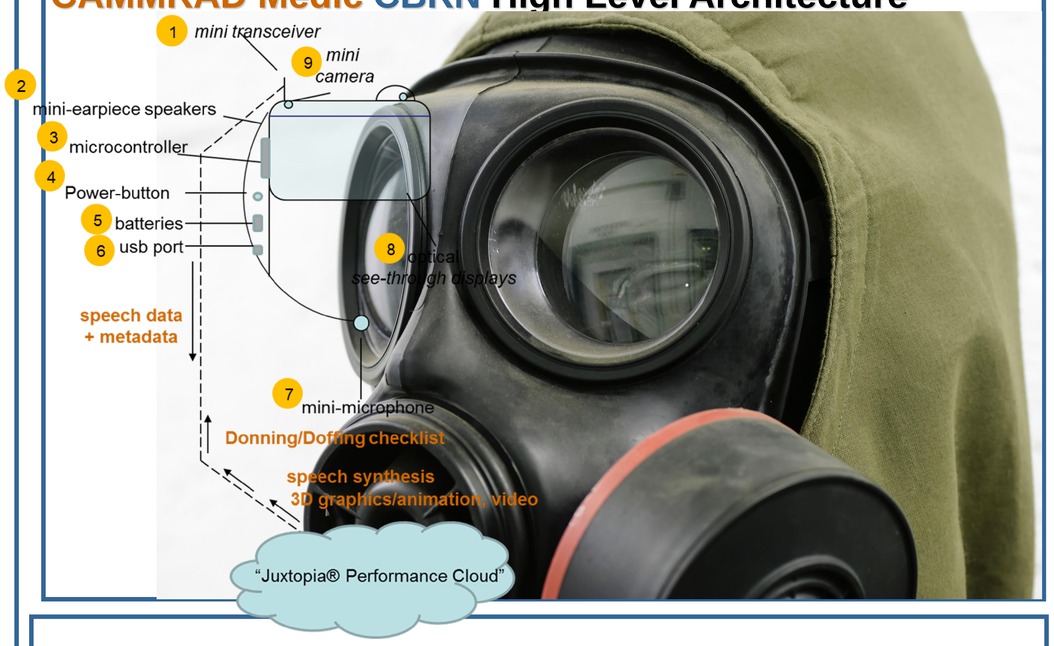
IMPROVING HUMAN PERFORMANCE

CAMMRAD Medic CBRN

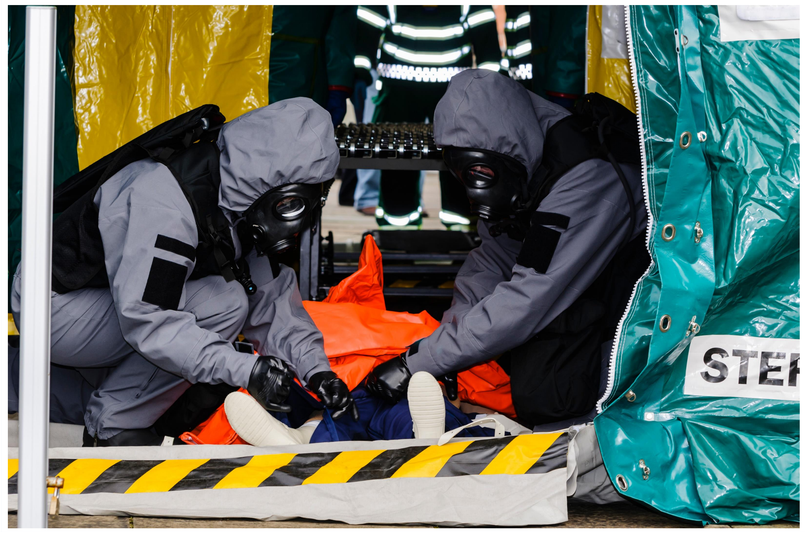
Problem. COVID-19 and the Russian Ukrainian war forecast potential CBRN weapon use in future conflicts. However, there is less focus and, hence, adequate training to address CBRN threats in both civil and military settings. Hence, medical personnel require immediate & advanced training to address CBRN related injuries.

Intervention. Military medics that wear ruggedized (i.e., MIL-STD 810H) Juxtopia® Context-Aware Mobile Mixed Reality Assistive Device (CAMMRAD) augmented reality (AR) Goggles, with voice/gesture access to Juxtopia® artificial intelligent (AI) e-training software services significantly improve conceptual and psychomotor learning performance (i.e., decrease learning time & improve skill accuracy) while training & practicing tactical combat casualty care (TCCC) clinical skills on simulated patients/ patient actors that express CBRN injuries within controlled & austere/severe environments.

CAMMRAD Medic CBRN High Level Architecture



CAMMRAD Medic CBRN E-Training



CAMMRAD Medic CBRN AR Sub-Subsystems.

1. **Mini-Transceiver.** Transmits data, wirelessly.
2. **Mini-speakers.** Computer speech feedback & radio.
3. **Microcontroller.** CPU, graphics card w/ 2D/3D acceleration, 2Ghz clock, 4GB RAM, MicroSD, wireless.
4. **Power button.** Power on/off the AR capability.
5. **Rechargeable batteries.** Provide >= 4 hrs. of operation.
6. **USB port.** Supports plug and play of CBRN sensors.
7. **Mini-microphone.** Voice document CBRN incidents.
8. **See-through Optics.** Present displays w/ eye-tracker.
9. **Mini-Camera.** Take pics and facilitate video-conference.
10. **Juxtopia® Performance Cloud.** Request and retrieve Juxtopia® virtual trainer (JVT) to *e-train*, *e-evaluate*, and *e-assist* military medics (and civilian first responders) perform psychomotor clinical procedures as a response to CBRN injuries.

CAMMRAD Medic CBRN Study Results

A 12-item post survey with a 5-point Likert scale ranging from 1 (agree) to 5 (disagree). Preliminary analysis of variance (ANOVA) yielded subjects agreeing that AR goggle are comfortable without PPE (M=2.7, SD=1.42) ANOVA showed no statistically significant differences between group responses on wearing the AR goggle in conjunction with PPE [F (1,8) = 1.71, p=.227] and without the PPE [F (1,8) =1.28, p=.290]. Subjects agreed that AR goggles had a clear display of training information (M=1.9, SD=1.20). On average, participants were neutral in response to JVT assisting them in identifying incorrect skills (M=3.0, SD=1.25) and agreed somewhat to the JVT providing evaluation of clinical skills performed (M=2.5, SD=1.35).