



## COGNITIVE SCIENCE

### OVERVIEW:

The Cognitive Science Team conducts basic and applied research that investigates the interactions among a Soldier's physical, cognitive, and emotional state, personal equipment, and Battlefield context. The Cognitive Performance Laboratory at NSRDEC is equipped with head's-up/head-mounted displays, eye-tracking technology, physiological (heart/breathing rate, Galvanic Skin Response) and neurophysiological (electroencephalography, functional near-infrared spectroscopy) monitoring devices, instrumented weapon replicas, and other seated and mobile assessment capabilities.



### FOCUS:

The Cognitive Science Team is principally concerned with understanding cognitive processes and mechanisms, optimizing Soldier performance, reducing cognitive load burdens, and providing recommendations and transitional results to technology developers. Basic research programs focus on identifying contextual variables that influence Soldier cognitive performance, while applied research programs explore how Soldiers interact with new technologies and personal equipment.



### CURRENT RESEARCH PROGRAMS:

- Effects of Battlefield context, nutrition, physical load, and variable terrain on cognitive performance during dismounted operations.
- Non-spatial influences on route planning and navigation.
- Information for detecting hostile behavior and intent.
- Statistical models of Chemical-Biological protective ensembles effects on cognitive performance.
- Emotional regulatory strategies for deployment cycle.
- Lighting technologies and shelter design to enhance Soldier cognition and affective state.
- Display technologies to provide situational awareness to dismounting Soldiers.
- Head's-up display technologies for Soldier vision protection and enhancement.



### POINT OF CONTACT:

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03-13-12 | OPSEC U12-087

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