



Eye-Tracking to Examine Decision-Making Strategies

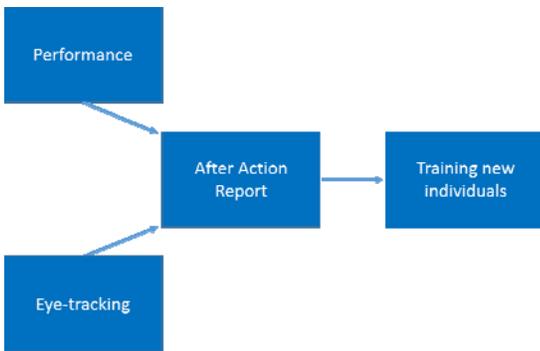


S&T Campaign: Human Sciences
Integration of Humans and Systems

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Research Objective

- Use eye-tracking to determine factors affecting decision making, such as shoot-don't shoot, and develop automated metrics of performance, such as situational awareness
- Understand patterning related to effective performance to enhance training effectiveness



Eye-tracking can be used in conjunction with performance to inform an After Action Report (AAR) of a mission. Combining performance with eye-tracking data showing a first-person perspective of what leads to particular outcomes allows a detailed and visual AAR that can be used to train those less experienced.

Challenges

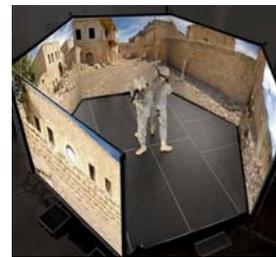
- What are the best measures of eye-tracking to determine intent? Fixations vs. search pattern vs. other
- Does eye-tracking need to be examined at the individual level to determine how it best predicts performance?



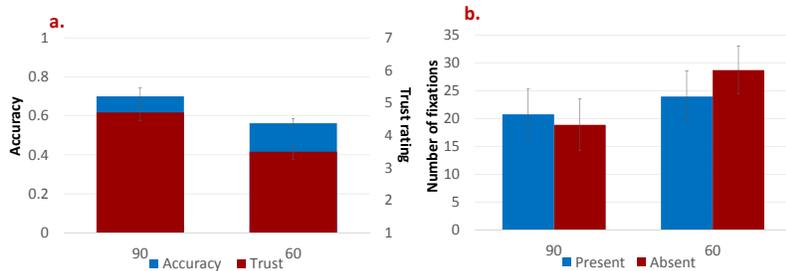
Heat map of fixations on Regions of Interest

ARL Facilities and Capabilities Available to Support Collaborative Research

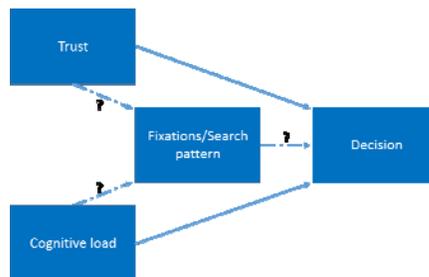
- Three tabletop eye-trackers available
- A mobile, ruggedized eye-tracker that can be used indoors, in a simulated environment, and outdoors, is in the early stages of development
- 300° simulated environment with return fire capabilities



- Preliminary results show that the number of fixations on present compared to absent targets were related to the trust in an information source and accuracy of the decision



a) Accuracy in decision-making and Trust in the source show that accuracy improves when trust is higher. b) With the more trusted source, participants have fewer fixations overall and fewer fixations on absent targets.



Fixations may moderate how trust and cognitive load affect participants' decisions in this task.

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Expertise in mobile eye-tracking data collection or analysis
- Experience in collecting eye-tracking data from groups or teams
- Laboratories or outdoor environments that are equipped to fully monitor (e.g., visually, auditorily) participants