2022

Extending Cognitive Assistance with AI Courses of Action

Runde, Sharon M.; Godin, Arkady A.

Monterey, California: Naval Postgraduate School

https://hdl.handle.net/10945/71813

Extending Cognitive Assistance with AI Courses of Action for Wargaming

Naval Postgraduate School

DOD, "Responsible AI Strategy and Implementation Pathway" six tenets:

- Modernize governance structures and processes that allow for continuous oversight of DOD use of AI, taking into account the context in which the technology will be used;
- Achieve a standard level of technological familiarity and proficiency for system operators to achieve justified confidence in AI and AI-enabled systems;
- Exercise appropriate care in the AI product and acquisition lifecycle to ensure potential AI risks are considered from the outset of an AI project, and efforts are taken to mitigate or ameliorate such risks and reduce unintended consequences, while enabling AI development at the pace the Department needs to meet the National Defense Strategy;
- Use the requirements validation process to ensure that capabilities that leverage AI are aligned with operational needs while addressing relevant AI risks;
- Promote a shared understanding of RAI [(Responsible Artificial Intelligence)] design, development, deployment, and use through domestic and international engagements; and
- Ensure that all DOD AI workforce member possess an appropriate understanding of the technology, its developmental process, and the operational methods applicable to implementing RAI commensurate with their duties within the archetype roles outlined in the 2020 DOD AI Education Strategy.


The problem is that in the United States Marine Corps (USMC) Fire Support Coordination Unit (FSCU) the FSCU Officer often does not have the correct, optimal information for SA and, as a result, can make poor decisions in the battlefield. This is a problem because it leads to fratricide and unintended civilian casualties.

Hypothesis & Objectives

One may expect that with more situational awareness (SA) that decision quality would improve. However, this research attempts to show that in a high tempo operational environment, more situational awareness may lead to greater cognitive fatigue sooner resulting in a decrease in decision quality sooner.

A cognitive assistant that can provide relevant & timely information while automating or digitizing planning activities and provide COAs may be able to reduce cognitive fatigue, provide more SA by handling the more routine tasks, thereby improving decision quality.
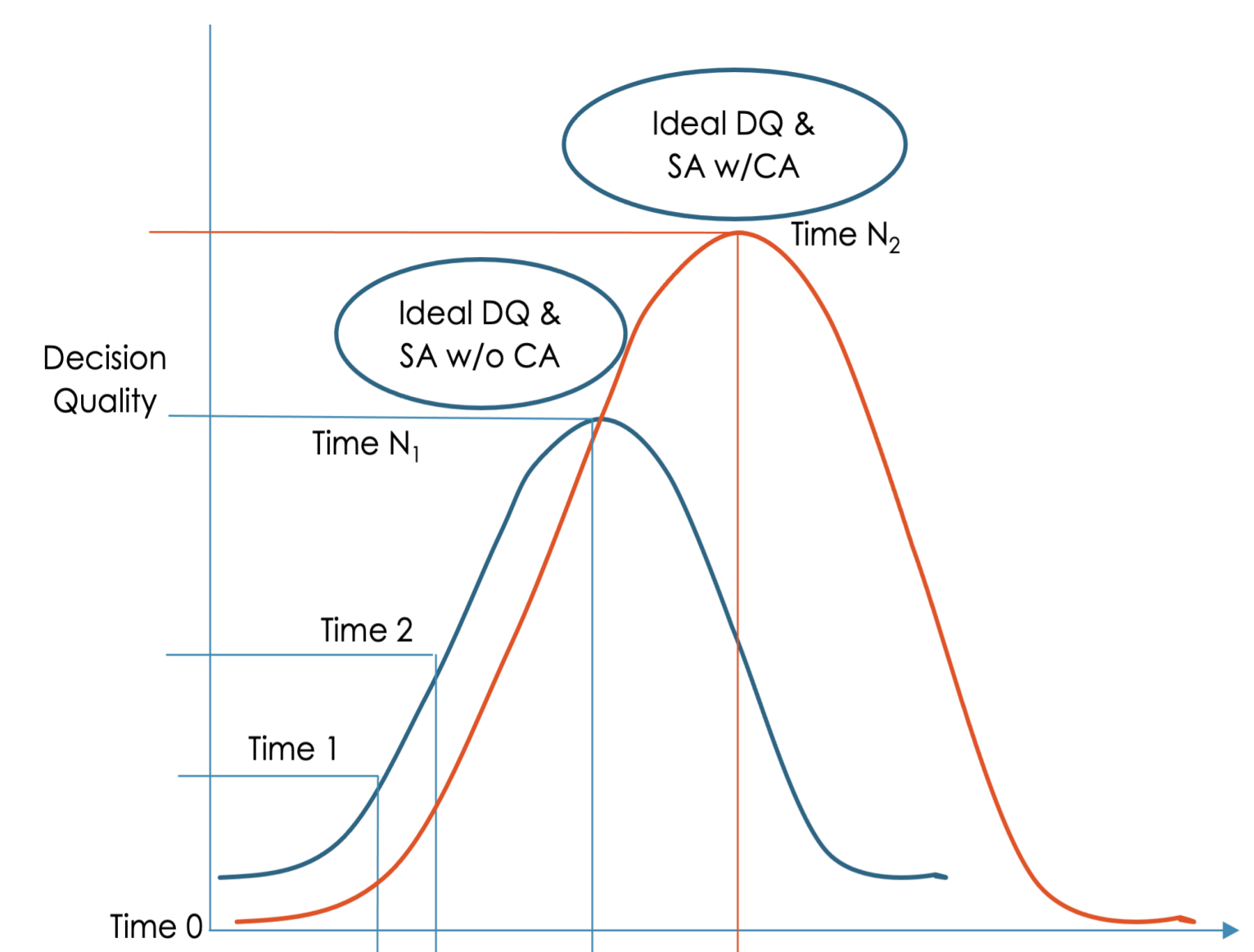
Recommendations

This research explored the availability of potentially existing cognitive agents that could provide situational awareness and context to an operator in an operational military environment. Since such a tool does not yet exist, it is recommended that this line of research continue so that the described discovery experiment plan can be executed.

Future research beyond the exploratory and discovery phases could look at how a cognitive agent could provide courses of action based on all data sources available.

Researchers: Ms. Sharon Runde, Information Sciences
Topic Sponsor: United States Marine Corps Plans, Policy, and Operations, Headquarters