REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHW-24-09

Cognitive and Neuroergonomic Components of Expert Decision Making

PROJECT DESCRIPTION: The aim of the Expert Decision Making research program is to better understand the expert decision-making process for time-critical events in dynamic, complex, uncertain environments. More specifically, the role of intuitive and deliberative decision making will be examined with behavioral and neuroergonomic measures. Objectives of the proposed research program are threefold. One, establish behavioral measures and neuroergonomic signals to distinguish the intuitive and deliberative decision-making processes. Two, establish means to enable effective decision making in unfamiliar, complex situations. Three, real-world like tasks in the aviation domain such as simulated in-flight decisions concerning unexpected automation failures will be used to better capture the nature of expert decision making. The research is aimed to not only contribute to the theoretical debate on the characterization of expert decision making but inform the design of intelligent human-automation systems and the identification of better training approaches that support rapid, effective decisions. The student intern will review relevant decision-making and expertise literatures, as well as participate in experimental design, flight simulation scenario development, data collection and analysis in the Prepar3D flight simulation environment, and scientific report writing.

ACADEMIC LEVEL: Undergraduate; Masters; Doctoral

DISCIPLINE NEEDED:

- Experimental Psychology
- Human Computer Interaction
- Cognitive Science

RESEARCH LOCATION: Wright-Patterson Air Force Base, Dayton, Ohio

RESEARCH MENTOR: Michael Vidulich, Ph.D.
Experimental Psychology, University of Illinois at Urban-Champaign, 1983

Dr. Michael A. Vidulich is a senior research psychologist in the Warfighter Interfaces Branch of the Air Force Research Laboratory's Human Effectiveness Directorate. He previously served as the Technical Advisor for the Warfighter Interface Division and the Collaborative Interfaces Branch. With a Ph.D. in experimental/engineering psychology and over 40 years' laboratory experience, Dr. Vidulich specializes in cognitive metrics for human-machine interface evaluation and adaptation.

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