

## Education

### 2019, PhD, Human Computer Interaction

Indiana University

Dissertation Title: Into the Black Box: Designing for Transparency in Artificial Intelligence

### 2011, Master of Science, Experimental Psychology

University of North Texas, Phi Kappa Phi Graduate

### 2004, Bachelor of Science, Psychology

Indiana University, Magna Cum Laude

## Research Interests

Dynamics of human-machine teaming; designing for resilience in dynamic, high-risk environments; trust in complex sociotechnical systems; human-systems integration; decision making in uncertainty; human performance in austere and extreme environments

## Select Publications

Vorm, E.S. , Combs, D.J.Y (2022) "Integrating Transparency, Trust, and Acceptance: The Intelligent Systems Technology Acceptance Model (ISTAM)," *Int J Hum Comput Interact*, pp. 1–18, 2022, doi: 10.1080/10447318.2022.2070107.

Gunning, D., Vorm, E.S., Wang, J.Y, and Turek, M. (2022) "DARPA's explainable AI (XAI) program: A retrospective," *Appl Ai Lett*, vol. 2, no. 4, doi: 10.1002/ail2.61.

Fompeyrine, D.A., Vorm, E.S., Ricka, N. et al. (2021) Enhancing human-machine teaming for medical prognosis through neural ordinary differential equations (NODEs). *Hum.-Intell. Syst. Integr.* 3, 263–275 (2021). <https://doi.org/10.1007/s42454-021-00037-z>.

Vorm, E. S. (2020). Computer-Centered Humans: Why Human-AI Interaction Research Will Be Critical to Successful AI Integration in the DoD. *IEEE Intelligent Systems*, 35(4), 112–116. <http://doi.org/10.1109/MIS.2020.3013133>

Vorm E.S., Miller A.D. (2020) Modeling User Information Needs to Enable Successful Human-Machine Teams: Designing Transparency for Autonomous Systems. In: Schmorow D., Fidopiastis C. (eds) *Augmented Cognition. Human Cognition and Behavior. HCII 2020. Lecture Notes in Computer Science*, vol 12197. Springer.

## Select Conference Proceedings

Vorm, E.S., and Combs, D.J.Y. (2021) Towards an Integrated Model of Trust and Technology Acceptance. Presented at the 2021 North American Treaty Organization (NATO) annual meeting for Trust in Hybrid Human-Machine Teams. PUB REF NBR (STO-MP-IST-999).

Vorm, E.S., (2020) Evaluating the Efficacy of Explanations in Deep Learning. Presented to the Distributed Information and Automation Laboratory, Department of Mechanical Engineering, University of Cambridge, UK.

Vorm, E.S., (2021). Enhancing Human-Maching Teaming through the use of Neural Ordinary Differential Equations (NODES). Presented at the American Association of Artificial Intelligence (AAAI) Conference Workshop on Explainable Agency, February 2021.

Vorm, E.S., (2020). DARPA's Explainable AI program and beyond: The importance of XAI in the DoD. Presented at the American Association for Artificial Intelligence (AAAI) Fall Symposium, 2nd workshop on deep models and artificial intelligence for defense applications: potentials, theories, practices, tools, and risk. November, 2020.



## Professional Experience

### 2022-Present: Senior Cognitive Systems Engineer

Naval Air Warfare Center Aircraft Division, Human Systems Engineering Dept. Patuxent River, MD.

Duties: Leads a team of 13 in the development and integration of novel technologies for warfighter performance in the aviation environment. Responsible for the testing and evaluation of aircrew systems for enhanced survivability, training, and human performance in high-risk domains. Provides expert scientific and experimental support to the Naval Aviation Enterprise in human-systems integration and testing.

### 2022-Present: Design of Experiments Lead, DARPA Enhanced Design for Graceful Extensibility (EDGE) Program

DARPA Defense Sciences Office, Washington, D.C.

Duties: Responsible for the design of experiments and all testing and evaluation of developed technologies. Develops operational scenarios, experimental design, methods and metrics for measuring the efficacy of novel human-machine interfaces in multi-vehicle autonomous interaction by a single operator.

### 2021-Present: Capabilities Portfolio Manager, Autonomy Community of Interest

Office of the Secretary of Defense, Washington, D.C.

Duties: Responsible for the reporting and tracking of all major programs related to the development of autonomous systems across all five branches of the Department of Defense. Coordinates the communication and dissemination of information across and between government laboratories and private institutions.

### 2019-2022: Deputy Director, Laboratory for Autonomous Systems Research

US Naval Research Laboratory, Washington, D.C.

Duties: Principal investigator for research in human-machine teaming; human-robot interaction; trust in autonomy; dynamics of robust hybrid teams. Led a research team of 32 scientists and engineers in the development of autonomous and robotics systems for the US Navy's corporate laboratory.

### 2019-2022: Evaluation Team Lead, DARPA Explainable Artificial Intelligence (XAI) Program

DARPA Information Innovation Office, Washington, D.C.

Duties: Responsible for the evaluation and validation of experiments for \$95M program across 11 academic institutions and private laboratories. Led a team of 8 in the evaluation and reporting of progress towards program goals to DARPA leadership. Developed independent evaluation metrics and novel methods for estimating the efficacy of computer-generated explanations on novice user populations.

### 2012-2016: Deputy Program Officer, Command Decision Making Program

Office of Naval Research, Washington, D.C.

Duties: Managed a \$7M portfolio of research in support of warfighter performance for the Navy's Science and Technology directorate. Responsible for technical review of proposals, budgeting, and reporting of progress to congress and US Navy stakeholders.

### 2008-2012 US Navy Corpsman, Special Operations

Independent duty assignment, Advanced Infantry Training Center, Al Anbar Province, Iraq

Duties: Medical provider to forward-deployed team of 13 Marine special operators tasked with training local security forces in Al Anbar region of Iraq; responsible for training and advising of foreign nationals; medical operations in austere environments; prolonged field care. Cross-trained in call for fire, joint terminal air controller (JTAC), pathfinder, and long-range reconnaissance.

