To Dr. Boring, Dr. Ockerman, and the HFES Technical Group Committee,

**We herein propose the creation of a new technical group in the society** focused specifically on cybersecurity. The details of this proposal are below, as is a link to the signatures of over 150 people, 75 of whom are HFES society members. Our hope is that this group can begin service ahead of the 2019 annual conference (e.g., be selectable as a submission TG when the call for papers opens).

**Proposed Name:** Cybersecurity Technical Group

**Purpose:** The purpose of this technical group is to bring the science of human factors to the cybersecurity domain. Currently there is no technical group in the society focused on cybersecurity. Recent application of techniques long familiar to HF/E to cyber are beginning to pay off (e.g., Martin, Dube, & Coovert, 2018 in the Human Factors Journal), but there is much work remaining to be done, and the community is wide, diverse, and will benefit greatly from unification. We believe this should happen internally to HFES.

Cybersecurity can be understood as a highly complex sociotechnical system. The purview spans studies of end-user security and privacy (where improving the interactions of humans with software and hardware tools will improve security and reduce the likelihood of successful attacks), to the operations of corporate and national teams of cyberspace defenders and red-teams. Cybersecurity human factors includes the scientific application of all human factors and cognitive as well as emotive concepts, including awareness, workload, stress, teaming, signal detection, decision-making, and attention research. It may be studied from the end user, system admin, analyst, manager or other system-element, from a broader sociotechnical and system-wide perspective, and from any place the human is a component of ensuring privacy or security in cyberspace. It also includes the burgeoning areas of automation, autonomy and human-machine teaming in cybersecurity and how to integrate the human's abilities and perspectives.

**Objectives:**

* To consolidate researchers within HFES in cyber, and grow the science of human factors in cybersecurity.
* To establish a modern HFES presence for cyber research and encourage more submissions and expertise in this area to attend and interact with the Society.
* To provide unification and clarity of leadership for cybersecurity within the Society.
* To connect with industry, academia and government entities interested in funding, applying, and collaborating on the science of humans in cybersecurity domains.

**Area of Interest:** human interactions in the cybersecurity domain (see ‘Purpose’ above)

**Cyber Technical Group Officers:**

The following roles have been agreed to by those chartering the group.

* **Technical Group Chair:** Dr. Robert Gutzwiller, *Arizona State University*
  + Dr. Gutzwiller is an experienced human factors professional and a Full member of the society since 2009. He has authored several papers on the human factors of cybersecurity, attention, and human-machine teaming. He has received the Jerome H. Ely award for the most outstanding paper in Human Factors (2016) and was recently awarded the best paper award for work with cyber red teamers from the Computer Systems/Internet Technical Groups in honor of Marc Resnick at the 2018 meeting. Dr. Gutzwiller has also received numerous awards from the U.S. Navy for distinguished leadership (2017) and exemplary achievement (2018).
* **Society annual meeting Program Chair:** Dr.Josiah Dykstra, *Department of Defense.*
  + Dr. Dykstra is a researcher and technical leader in cybersecurity operations, and a Full member of HFES. He has studied and published on human augmentation with augmented reality, fatigue and frustration in cybersecurity operations, and human traits and reputation for cybersecurity behavior. Dr. Dykstra received the Presidential Early Career Award for Scientists and Engineers (2017), among other government, academic, and industry awards.
* **Program chair designate:** Dr.David Schuster, *San Jose State University*
  + Dr. Schuster’s has conducted research in domains such as aviation, transportation security training, and military human-robot interaction. Currently, he is interested in how complex sociotechnical systems support or hinder people, with a particular focus on decision making among cybersecurity professionals. He was awarded a five-year NSF CAREER award (2015) to study human cognition in cyber defense, and he received the Early Career Investigator Award from the SJSU Research Foundation (2017). Dave is a Full member of HFES.
* **Newsletter editor**; Megan Nyre-Yu, *Purdue University*
  + Megan is a PhD candidate at Purdue University and a Student member of HFES since 2014. During her graduate studies, Megan was the recipient of the Robert E. Savage Fellowship (2014), and won multiple competitions in UX design at HFES UX Day (2016) and HACKtheMACHINE (2017). Her dissertation is focused on human-machine integration in cybersecurity incident response, and includes over 100 hours of observation and interviews with cybersecurity analysts. A poster representation of her thesis earned her a Certificate of Excellence in Interdisciplinary Research (2018) from Purdue University. Megan is a student member of HFES.

\*Other officers may be defined if the measure succeeds and the TG is chartered.

**We provide a list containing the names of individuals interested in chartering and  joining the technical group. As per the rules,** we have met the minimum required number of HFES members (currently 75) and total number of individuals (currently 179) interested in chartering this TG.

<https://docs.google.com/spreadsheets/d/1F9qqSM9MmC3q02F9ac7jCPKF1ZzpcEQ__e-Sd78wsuI/edit?usp=sharing>

Potential TG members were solicited in a variety of ways including personal contact lists, other technical groups, other scientific societies, throughout the government and government agencies, as well as industry. Each potential member indicated their interest via a Google Form (<https://goo.gl/forms/UVsEhv8swuB6biOn1> → for a link to the current survey form), in which they provided their agreement that they were "signing the petition to charter a cyber technical group”.

**Additional cyberspace TG community interests of note**

As part of our intention in starting a technical group, we also solicited petitioners for *additional* their relative **interests** in special topic areas *within* cybersecurity. Considering these as potential future special tracks or sessions may help HFES society develop and maintain focus on cybersecurity. Below are the top 6 topics, sorted by total % interest of respondents.

1. (74.3%) Human-machine teaming, automation, and/or autonomy (including trust) specific to cyberspace operations
2. (73.2%) Usability, user experience (UX), social engineering, cyber hygiene, and end-user security in cyberspace
3. (65.4%) Study of attackers/defenders and attacker/defender cognition, social interactions and organization
4. (58.7%) Cybersecurity related to users of the internet of things (IoT)
5. (56.4%) Cyber deception perspectives, levels, and interactions between them (user--software--hardware--algorithms)
6. (44.7%) Cybersecurity of large-scale networks, including corporate or government

Petitioners also provided additional topic areas:

* Fusing of cyber information with other intelligence and operational information streams
* Cyberspace situational awareness
* Compliance in cybersecurity from the human perspective
* Training differences in cybersecurity education for analysts, and for end-user, general population
* Computational models of cybersecurity human behavior
* The use of AI and machine learning in cybersecurity as it relates to the human operators and designers

In conclusion, it is clear that now is the time for a community to organize around these issues. HFES should be a nexus for practitioners, researchers, industry, academia and government to come together. We expect our concentration of interests (as well as inclusion of potential sponsors and consumers) and the leverage of the group within HFES will make this successful.

We thank you for your time and review of this issue, and look forward to further engagement with the society leadership.

Sincerely,

Robert Gutzwiller, PhD, *Arizona State University*

Josiah Dykstra, PhD, *Department of Defense*

David Schuster, PhD, *San Jose State University*

Megan Nyre-Yu, MS, *Purdue University*

Sunny Fugate, PhD, *Space and Naval Warfare Systems Center Pacific (US Navy)*

Kimberly Ferguson-Walter, MS, *Department of Defense*