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FW-HTF: FY 2018 Research Themes

FY 2018 proposals focus on one of two themes...

- Theme 1: Foundations for Augmenting Human Cognition
- Theme 2: Embodied Intelligent Cognitive Assistants (e-ICAs)





Theme 1: Foundations for Augmenting Human Cognition

- Models of human cognition are foundational to advancing cognitive capabilities:
 - social understanding and interaction; biases in judgment; attention; learning; memory; perception; emotion; comprehension
- Encourages research on augmentation of human physical abilities that interact with perceptual, cognitive, affective, and social abilities in the context of work.
- Encourages research examining how the mind may shape and be shaped by cognitive technology.
 - including the reciprocal effects of technology and human skills and abilities
- The increasing imperative for retraining over the lifespan heightens the importance of understanding and enhancing how people and systems learn in educational settings, and how instruction can change to incorporate technologies.





Theme 1 Projects:

- MUST address fundamental questions regarding human cognitive systems in the context of the future of work,
- MUST lead to new knowledge in relevant science, engineering, and education fields.
- MAY incorporate meaningful research in which hardware or software testbeds co-evolve with, and synergistically inform, augmentation of human cognition.
- MAY address fundamental ways in which human cognition can be bolstered with technology in the context of how work and society can benefit from these improvements.
 - augmenting perception, learning, language understanding, interdisciplinary communication, decision making, planning, and collaboration





Theme 2: Embodied Intelligent Cognitive Assistants (e-ICAs)

Theme 2 focuses on the impact of a specific class of devices **within the broader socio-economic framework of jobs and work**. These devices are Embodied Intelligent Cognitive Assistants (e-ICAs)

- ICAs are electronic devices, external to the body, that are informed by and responsive to the architecture of the human brain for the purpose of enhancing human capabilities.
- ICAs utilize machine learning and artificial intelligence algorithms, advanced multimodal sensing and high-bandwidth communications capabilities.
- Embodied ICAs (e-ICAs) integrate perception and action in response to environmental and/or user stimuli.
- Theme 2 proposals **MUST** incorporate embodied-ICA devices and systems.





Theme 2 Topics of Interest Include...

- e-ICA-enabled systems in the context of education and training, required to enhance worker viability in the future workplace.
- integration of contextual knowledge and artificial intelligence; learning across multiple timescales; operating with human partners through natural interactions involving intuitive interfaces; developing trust within human-machine interactions; aspects of security and reliability of human-machine interactions
- understanding which human capabilities can be delegated to the e-ICA; how new capabilities of e-ICAs can best enhance specific jobs; how the introduction of e-ICAs can enhance job satisfaction, corporate profitability and the national economic health





Questions and Answers



