Opportunity Title: Enabling Components of Human Augmentation
Opportunity Reference Code: ICPD-2023-33

Organization Office of the Director of National Intelligence (ODNI)

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How to Apply

Create and release your Profile on Zintellect – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 2 pages.**

Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at: https://orise.orau.gov/icpostdoc/index.html.

If you have questions, send an email to ICPostdoc@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline 2/28/2023 6:00:00 PM Eastern Time Zone

Description

Research Topic Description, including Problem Statement:

Devices for detecting a variety of inputs including motion, pressure, and electrical activity are necessary for many human-augmentation technologies. However, development in human augmentation is incremental and derives from advances in technologies that fill a need. More recently, researchers have begun to realize the possibilities of these technologies in advancing human capabilities, and projects have developed with the aim of extending a person's abilities. Sensors that enable human augmentation, for example, can include implants, biotechnologies, and information technologies. The aim of this topic is to develop a fundamental understanding of enhanced capabilities, augmented intelligence, and more rapid, structured, voluminous data exchanged between human and machine.

Example Approaches:

A brain-machine interface requires sensors to input information from brain function to a machine, or vice versa. Human augmentation has great potential through bioengineering to achieve significant advances in enhancement and control process of human capabilities beyond their normal range. There are different ways to approach this research; versatility is encouraged. For example:

- One approach could investigate enabling components which would allow a brain-machine interface to control a swarm constellation or receive multiple intelligence feeds from

different platforms, taking a systems of systems integration approach.
- A different approach could focus on investigating advanced software using machine learning and big data to augment the potential for a human-machine interface to be used in support of intelligence collection or analysis. Whether information technology augments human intelligence via brain interfaces or via advanced wearables, software will need to determine the information, intelligence, or other input that would increase human cognitive capacity.
- Another approach could explore a human-machines interface's potential for augmenting human capabilities, such as boosting human reaction time or altering human behaviors, while investigating how different sensors or implants could improve these abilities.

Relevance to the Intelligence Community (IC):

The linkage to current DNI's S&T priorities is dependent on the submissions we receive. However, we anticipate those submissions will likely include the following priorities: Artificial Intelligence/Machine Learning and Biotechnology.

Qualifications

Postdoc Eligibility

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the application deadline
- Proposal must be associated with an accredited U.S. university, college, or U.S. government laboratory
- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

Research Advisor Eligibility

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

Key Words: Human Augmentation, Cognitive Augmentation, Bio-electronics, Neural Interface, Human-machine Teaming, Human-machine Interface, Bio-engineering, Bio-materials, Sensors, Electronic Skin, Artificial Neural Networks, Brain-Computer Interface, Cognitive Enhancement, Human-in-the-loop

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (6 👁)
  - **Computer, Information, and Data Sciences** (17 👁)

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- **Earth and Geosciences** (21 👁)
- **Engineering** (27 👁)
- **Environmental and Marine Sciences** (14 👁)
- **Life Health and Medical Sciences** (48 👁)
- **Mathematics and Statistics** (11 👁)
- **Other Non-Science & Engineering** (2 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (1 👁)
- **Social and Behavioral Sciences** (29 👁)