PROPOSAL INSTRUCTIONS

Overview:	The Center for Applied Brain & Cognitive Sciences welcomes pilot and full program proposals aimed at fulfilling the Center's objectives to advance the state-of-the-art in applied brain and cognitive sciences through interdisciplinary science and engineering. The Center provides an innovative environment for supporting and conducting collaborative applied research focused on measuring, predicting, and enhancing cognitive capabilities and human systems interactions for individuals and teams working in naturalistic high stakes environments. See www.centerforabcs.org for details.
Award Types:	The Center aims to support two award types, Pilot and Full. *Pilot programs* are 8 months in duration and are intended to support early idea development, protocol approvals, and pilot testing. The pilot program should preface full proposal development, including pilot data collection to inform feasibility and highlight potential contributions of the full proposal. Pilot program maximum budget is $15,000, including a maximum $500 travel stipend, and maximum $6000 materials/equipment cost. Note that these limits are on direct costs not including fringe rates. You do not need to account for fringe rates on personnel spending or indirect costs in your proposed budget. *Full programs* are 12 months in duration and are intended to support research and development efforts that make fundamental contributions to the Center's stated objectives. Initial funding is 12 months, which may be renewed once pending successful year 1 execution, report submission, and panel review. Full program maximum annual budget is $70,000, including a maximum $3,000 annual travel stipend, and maximum $4000 materials/equipment cost. Note that these limits are on direct costs not including fringe rates. You do not need to account for fringe rates on personnel spending or indirect costs in your proposed budget.
Important Dates: *(Dates subject to change. Please contact us for updated information.)*	

Action Item	Deadline
Proposal Submission	February 1, 2017
Award Notification	March 1, 2017
Award Funding Activation	TBD, proposal specific
Renewal Request	February 1, 2018
Award Funding End	May 31, 2018
Annual Report	June 30, 2018

How to Apply:

The Center relies on strong collaboration between Tufts and DEVCOM Soldier Center (SC) Investigators. Before you begin preparing your application, please take some time to identify possible DEVCOM SC collaborators by viewing their descriptions at the Center website: http://www.centerforabcs.org/index.php/about/centerpeople.
Once you've identified some possible collaborators, please e-mail centerforabcs@tufts.edu identifying the individuals that you feel may best enhance your proposed project, and a short description of the work you intend to undertake. The Center program coordinator or one of the DEVCOM SC collaborators will reach out to you to begin the proposal process. Please note that while the goal of connecting collaborators early in the proposal process is to ensure that proposals are well-aligned with the Center's five topic areas, working with a collaborator does not guarantee funding.

Application materials, including templates and instructions, can be downloaded from the Center's website: http://www.centerforabcs.org, and questions should be sent to the Center's email address: centerforabcs@tufts.edu

The application must include the following two documents:

1. A complete Pilot or Full program proposal.
    a. Note on budget preparation: please do not calculate fringe or indirect costs when submitting your budget. If you have questions about equipment availability or services available at no cost through the Center, please e-mail centerforabcs@tufts.edu.
2. Updated CVs for all involved faculty.
3. Copies of CITI completion reports for all Investigators.

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	Send application materials, via email, to centerforabcs@tufts.edu
Unique Requirements:	All applications must conform to the following pre-award and post-award requirements: *Pre-Award* 1. Proposals must be directed at fulfilling the Center's objectives and fit clearly into one of the Center's topic areas. 2. Proposals must formally involve at least two Tufts faculty members, from at least two departments (e.g., Computer Science and Psychology, Biomedical Engineering and Nutrition School, Mechanical Engineering and Computer Science, etc.). 3. Proposals must indicate a primary DEVCOM SC scientific collaborator. *Post-Award* 1. All funded human use experimentation must be approved by the Tufts University Institutional Review Board (IRB), and then the U.S. Army Human Research Protections Office (AHRPO). Expect this latter process to take 2-4 weeks. Post-award instructions will be provided. 2. Each award recipient is required to attend and present a poster of their work at the Center's annual Open House. This is a great opportunity for graduate students and scholars, though faculty members are also welcome to present. 3. Each award recipient is required to submit an annual report (see Annual Report Template), and renewal request if invited (see Renewal Request Template), to centerforabcs@tufts.edu. See Important Dates, above.
Topic Areas:	Each year, the Center for Applied Brain & Cognitive Sciences will issue formal topic areas to guide and constrain proposed efforts. For 2017, each proposal must be explicitly linked to at least one of the below topic areas: **Topic A**: *Monitoring Individuals and Small Teams*: Projects falling under this topic will focus on identifying, testing, evaluating, and validating innovative multi-modal (physiological, neurophysiological, behavioral, hormonal) sensor technologies and associated metrics for monitoring and characterizing cognitive and non-cognitive states such as frustration, mental workload, stress, readiness for problem solving, fear, uncertainty, adaptability, agility, and fatigue (cognitive and/or physical). Special emphasis will be placed on monitoring tools and techniques with validity for understanding cognition at the level of individuals and teams, and reliability under conditions of ambulation and immersion in virtual reality. **Topic B**: *Characterizing and Predicting Individual and Small Team Performance*: Projects falling under this topic will focus on characterizing the range of internal (individual-level) and external (contextual-level) parameters responsible for guiding and constraining perception, cognition, and action during applied task performance. Parameters may include individual differences, nutritional status, availability of and/or reliance on support from robotic assets, task constraints and goals, and ongoing mental and affective states. Special emphasis will be placed on developing and populating predictive models (e.g., Bayesian) of individual and small-team situation awareness and decision making in the context of complex scenarios, chaotic events, and uncertainty, using existing and new data sources. **Topic C**: *Optimizing Individual and Small Team Performance*: Projects falling under this topic will focus on identifying and validating innovative tools and techniques for sustaining and optimizing perception, cognition, and emotion in the face of chaos and uncertainty during applied task performance. Tools and techniques may include identifying and developing successful long-term strategies to promote emotion regulation and learning, and acute strategies to promote adaptability and confidence via techniques such as neurostimulation and nutritional supplementation. Optimization tools may also include support from autonomous or augmented reality systems. Special emphasis will be placed on optimization tools and techniques with reliability or the potential for reliability in a variety of contexts, including the classroom and under conditions of ambulation and immersion in virtual reality.

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Resource Availability:	The Center is prepared to provide facilities and equipment access to faculty and students for supporting the execution of research and development awards. The Center houses the following primary capabilities: *Head-Mounted Virtual Reality:* Three head-mounted virtual reality displays (Oculus Rift) and large-screen LCD displays, to simulate real-world experiences and measure behavioral and physiological outcomes. This capability is ideal for both individual and small team (up to 3 individuals) experimentation. *Ambulatory CAVE-based Virtual Reality:* Three large-scale immersive virtual reality systems with realistic environments and scenarios, multimodal participant inputs, embedded data logging, and wireless physiological and neurophysiological measures. This capability is ideal for both individual and small team (up to 3 individuals) experimentation. *Brain Monitoring and Stimulation:* Whole-head functional near-infrared spectroscopy and high density electroencephalography (EEG) are available for brain monitoring applications. Targeted low current transcranial direct and alternating current stimulation (tDCS/tACS) are available for targeting neural mechanisms underlying task performance. *Exercise, Physiology, and Neurophysiology:* Treadmill and ergometer equipment are available for introducing physical exertion demands, with the possibility of monitoring physiological demands (heart rate, respiration rate, electromyography) and neurophysiological outcomes using electroencephalography (EEG) or functional near-infrared spectroscopy (fNIRS). See the “Center Capabilities and Resources” page at www.centerforabcs.org for more detail on the resources available through the Center.