NJIT Research Newsletter

Issue: ORN-2016-045

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NJIT Research Newsletter includes recent awards, and announcements of research related seminars, webinars, national and federal research news related to research funding, and ***Grant Opportunity Alerts***. The Newsletter is posted on the NJIT Research Website http://www.njit.edu/research/ . **This Newsletter features a new section on "Recent Patents".**

NJIT Office of Research
Event Calendar
Save the Date

Event: NJEdge.Net Research and Education Network: Spark, Hadoop and Friends
When: January 4, 2017, 8:45 am - 4:30 pm
Where: NJIT Guttenberg Information Technology Center, Room 3710
Brief Description: The workshop will cover the essential introductory aspects of Apache Spark within the Hadoop 2 ecosystem. Spark is a high level language for big data programming that offers high performance (due to in-memory computation) and simplicity (supports Python, R, Scala, or Java front ends). After completing the workshop attendees will gain an understanding Spark's value proposition and acquire hands-on experience with basic Spark operation (primarily PySpark) and the Zeppelin graphical web interface for Spark. To assist with continued learning, additional background and resources are provided. Roughly thirty percent of the workshop time is devoted to hands-on exercises that include machine learning and data cleaning techniques.
Intended Audience: This workshop is an introduction to Spark programing. Those from the physical and biological sciences will learn how to use Spark's high-level capabilities for their projects. Devops and programmers that are new to Hadoop or big data will learn how to write Spark programs. Finally, those involved in data science or statistics will learn about how Spark can be used as an analytics tool.
Prerequisites: Although most of the work will be using the Zeppelin GUI, familiarity with Linux command line, bash shell, simple text editing, and Python. If you wish to participate in the exercises, please bring your own laptop that is Wifi capable, has an up-to-date web browser and provides an ssh client (For Windows users, we highly recommend MobaXterm, http://mobaxterm.mobatek.net.).
About the Presenter:
Douglas Eadline, PhD, began his career as a practitioner and a chronicler of the Linux cluster HPC revolution and now documents big data analytics. Starting with the first Beowulf Cluster how-to document, Doug has written hundreds of articles, white papers, and instructional documents covering virtually all aspects of High Performance Computing (HPC) computing. Prior to starting and editing the popular ClusterMonkey.net website in 2005, he served as editor-in-chief for

ClusterWorld Magazine, and was senior HPC editor for Linux Magazine. Currently, he is a writer and consultant to the HPC/Data Analytics industry and leader of the Limulus Personal Cluster Project (http://limulus.basement-supercomputing.com). He is author of *Hadoop Fundamentals LiveLessons and Apache Hadoop YARN Fundamentals LiveLessons* videos from Pearson and book coauthor of *Apache Hadoop YARN: Moving beyond MapReduce and Batch Processing with Apache Hadoop 2* and *Practical Data Science with Hadoop and Spark: Designing and Building Effective Analytics at Scale* and sole author of *Hadoop 2 Quick Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem.* Note: A copy of the book Practical Data Science with Hadoop and Spark: Designing and Building Effective Analytics at Scale will be given to each participant. Registration Fee: $70

Registration Website: https://www.cvent.com/events/spark-hadoop-and-friends/registration-e1d8f2c8031444bc88da307dc33ef74b.aspx?i=31ffbaea-3c28-41cd-9c44-52b77139872d

Event: Second Annual Symposium on Research and Teaching Using IST ARCS-Managed High Performance Computing (HPC), Big Data (BD), and Database Resources
When: January 11, 2017; 10.00 AM – 12.00 PM; 1.00 PM – 3.00 PM
Where: NJIT GITC 3710
Brief Description: The purpose of this symposium is for researchers to present examples of their research performed using resources managed by IST ARCS, so that experiences can be shared, and technical information exchanged. Proposals for presentations are invited from any field of research or teaching, limited to projects using ARCS-managed resources.
Submit Abstracts: Please send abstracts of such proposals, not to exceed 500 words, as a PDF attachment, to *arcs@njit.edu*, with subject : **"Proposal - 2017 Symposium on Research and Teaching Using ARCS-managed Resources", by 23 December 2016.** Presentations should last about 20 minutes, with 5 additional minutes for questions. Presentations may be made by faculty, staff, or students. Attendees should bring their laptops, since web access may be useful. Presenters and their research students are encouraged to attend all presentations, as they may gain insights from interaction with the other presenters and attendees.

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Grant Opportunity Alerts
Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Energy-Efficient Computing: from Devices to Architectures (E2CDA); Innovations at the Nexus of Food, Energy and Water Systems (INFEWS); Cyber-Physical Systems (CPS); Cyberinfrastructure for Emerging Science and Engineering Research (CESER); Cybersecurity Innovation for Cyberinfrastructure (CICI); Cyberlearning and Future Learning Technologies
NIH: Innovative Programs to Enhance Research Training (IPERT) (R25); Maximizing Access to Research Careers Undergraduate - Student Training in Academic Research (MARC U-STAR) (T34); BRAIN Initiative: Targeted BRAIN Circuits Projects - TargetedBCP (R01) (R21); Exploratory Research for Technology Development (R21)
Department of Defense/US Army/DARPA/ONR: Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology
Department of Energy: Buildings Energy Efficiency Frontiers & Innovation Technologies (BENEFIT) – 2017; Fuel Cells Technologies Office Annual Funding Opportunity Announcement;
NASA: ROSES 2016: Advanced Information Systems Technology
National Endowment of Humanities: Public Scholar Program; Public Humanities Projects
Vodafone America Foundation: Wireless Innovation Project

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Recent Research Grant and Contract Awards
Congratulations to faculty and staff on receiving research grant and contract awards!

PI: Louis Lanzerotti (PI) and Andrew Gerrard (Co-PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Van Allen Probes RBSPICE Phase E Operations - Extended Mission I (ARDES)
Funding Agency: NASA
Duration: 07/15/16-12/15/17

PI: Piero Armenante (PI)
Department: Chemical, Biological and Pharmaceutical Engineering
Grant/Contract Project Title: Hydrodynamics and Mixing in a Compounding Tank Provided with Angle-Mounted Impellers
Funding Agency: MSD International GMBH
Duration: 12/06/15-12/31/17

PI: Bharat Biswal (PI)
Department: Biomedical Engineering
Grant/Contract Project Title: Longitudinal, multimodal analysis of HIV and ART effects on brain metabolism, structure and connectivity in young children
Funding Agency: NIH
Duration: 07/22/15-06/30/17

PI: Bin Chen (PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Particle Energization in Solar Flares: Combining Observations from a Suite of NASA Missions with the Jansky Very Large Array
Funding Agency: NASA
Duration: 01/01/17-12/31/19

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Agency Announcements and In the News...
(National and Federal News Related to Research Funding and Grant Opportunities)

NSF: Following open discussion at the National Science Board meeting on November 8th and 9th, NSF has established the Total Project Cost (TPC) eligibility threshold for potential inclusion in the Major Research Equipment and Facilities Construction (MREFC) account at $70M. This adjustment responds to emergent scientific research opportunities and addresses the gap that previously existed between smaller instrumentation and major facility projects. Further details on MREFC account eligibility will be included in the FY 2017 revision of NSF's Large Facilities Manual which will be published in December and made available on the Large Facilities Office website (https://www.nsf.gov/bfa/lfo/index.jsp). The scientific community should incorporate this change in their long range portfolio planning and prioritization efforts. NSF policy has been that MREFC projects must be of a magnitude that exceed 10% of a Directorate's annual budget. For the present NSF Directorates this would from about $70 million for Biological Sciences to over $130 million for Geosciences and Math and Physical Sciences. The home Directorate remains responsible for other

segments of the life cycle including pre-construction activities, and post-construction operations. The segmentation of life-cycle funding responsibilities has been a key element of planning for NSF managers in implementing decadal surveys for various disciplines. Now, the NSF has announced that the threshold for considering MREFC candidates has been set at $70 million. This would provide for more consistent application of MREFC rules and policies and would also respond to the gap that has existed between smaller instrumentation and larger construction projects. Closing this gap in the mid-scale range has been one of the major "Big Ideas" advocated by NSF Director France Córdova. More Infomration on website https://www.nsf.gov/bfa/lfo/lfo_documents.jsp .

Congress: House approves the 21st Century Cures Act, sending landmark bill to Senate: After three years of debate, countless hearings, and pleas from patient advocates, lawmakers on Tuesday approved legislation to speed new medicines to market and to authorize an additional $4.8 billion in spending for medical research. The landmark legislation provides $4.8 billion for the three signature Obama administration research programs over the next 10 years: Vice President Joe Biden's cancer moonshot, the BRAIN Initiative, and the Precision Medicine Initiative. It would also give states $1 billion to fight the opioid crisis, and deliver an additional $500 million to the FDA. More information on the website https://www.statnews.com/2016/11/30/21st-century-cures-act-house/?utm_content=buffer3ecac&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

NIH Strategic Plan: The NIH Office of Behavioral and Social Sciences Research has published a strategic plan that details scientific priorities and research priorities for 2017-2021. The highest priority recommended in the plan is to promote transformative breakthroughs by integrating basic behavioral and social sciences research with advances in neuroscience, genetics, and other emerging fields which are beginning to elucidate the complex dynamic mechanisms that shape the brain, behavior, and environment. The plan also recommends an enhancement in research infrastructure particularly establishing common data protocols, and measurement metrics. Finally the plan urges greater integration of behavioral and social science research into actual interventions in practice.. More information with full report on: https://www.nih.gov/news-events/news-releases/new-strategic-direction-behavioral-social-sciences-research-nih

Congress: National Defense Authorization Act For Fiscal Year 2017: The compromise National Defense Authorization bill that emerged from a conference led by Sen. John McCain (R-Ariz.) and Mac Thornberry (R-Tex.) "is expected to easily pass the Senate, heading to President Barack Obama's desk for signature with what could be veto-proof majorities in both chambers," CQ reports. The measure passed the House Friday 375-34. Here are highlights from the **conference report**:

- **Manufacturing engineering education grants:** Awards can be made to industry, not-for-profit institutions, institutions of higher education, or to consortia of such institutions for "multidisciplinary instruction that encompasses the total manufacturing engineering enterprise" including "classroom activities, laboratory activities, thesis projects, individual or team projects, internships, cooperative work-study programs, and interactions with industrial facilities, consortia, or . . . other activities and organizations in the United States and foreign countries . . . ."
- Permanent authorization of the **Rapid Innovation Program.**

More Information about the Act is on website: http://docs.house.gov/billsthisweek/20161128/CRPT-114HRPT-S2943.pdf

L'Oreal Fellowship Program for Women Post-Docs: The L'Oréal USA For Women In Science fellowship program awards five post-doctoral women scientists annually with grants of $60,000 each. Applicants are selected from a variety of fields, including the life and physical/material sciences, technology (including computer science), engineering, and mathematics. Applications will open on November 28, 2016 and are due by February 3, 2017. The application and more information about the L'Oréal USA For Women in Science program can be found at **www.lorealusa.com/forwomeninscience**.

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Webinar and Events

Event: NSF Webinar: Software Infrastructure for Sustained Innovations (SI2) Program
When: December 13, 2016 3.00 PM – 4.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=190551&org=NSF
Brief Description: The Software Infrastructure for Sustained Innovations (SI2) program, which has been in existence since 2010, has catalyzed new thinking, paradigms, and practices in using software within NSF's vision of Cyberinfrastructure Framework for 21st Century Science and Engineering (CF21). The latest revision of the SI2 solicitation is now available here: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503489&org=NSF&sel_org=NSF&from=fund. Revisions are as follows:
  • The solicitation is especially interested in proposals that advance the National Strategic Computing Initiative (NSCI).
  • The current priorities of participating units have been updated for 2017, including, but not limited to, advancing the goals of the NSCI.
  • The solicitation specific review criteria have been refined in the interests of greater clarity.
  • This solicitation now includes the option to submit S2I2 Conceptualization proposals.
This webinar will provide an overview the SI2 program and its updates for 2017. An open Q&A and discussion will follow the overview.
Please register at:
https://nsf.webex.com/nsf/j.php?RGID=rc76db1a61e62bc03f58ddcca21931c46 by 11:59pm EST on Monday December 12, 2016.

Event: NSF Webinar: ADVANCE Partnership Proposal Presentation
When: December 14, 2016; 12.00 PM – 5.00 PM
January 11, 2017; 12.00 PM – 5.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=135008&org=NSF
Brief Description: The ADVANCE program office held a pre-proposal technical assistance webinar on September 21, 2016 on the ADVANCE *Partnership* track described in the ADVANCE solicitation 16-594. The *Partnership* presentation slides can be downloaded at the end of this web page. Please be sure to review the solicitation for the official guidelines and information on preparing and submitting ADVANCE proposals.
ADVANCE Summary of Deadlines (NSF 16-594):
•*Partnership*
•December 14, 2016* Letter of Intent deadline (LOI is required in order to submit full proposal)
•January 11, 2017* Full Proposal deadline

•*Institutional Transformation*
•April 12, 2017* Preliminary proposal deadline (required in order to submit full proposal)
•January 17, 2018* Full Proposal deadline (only <u>if</u> invited after preliminary proposal review)
•*Adaptation*
•August 9, 2017* Letter of Intent deadline (LOI is required in order to submit full proposal)
•September 13, 2017* Full Proposal deadline
      Other funding opportunities:
•*ADVANCE Resource and Coordination Network*
•Target date for full proposal – March 15, 2017
•Talk to program office first ADVANCE@nsf.gov
•*ADVANCE Longitudinal Evaluation*
•Submit as an unsolicited proposal according to the NSF Grant Proposal Guide – no deadline
•Talk to program office first ADVANCE@nsf.gov

Event: 2016 NRT (NSF Research Traineeship) Program Information Webinar
When: November 9, 2015 1:00 AM to December 9, 2016 11:45 PM
Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=134466&org=NSF
Brief Description: The NSF Research Traineeship program (NRT) prerecorded informational videos to provide an overview of the NRT program and describe the key similarities and differences of the two tracks. The aim of these webinars was to give potential principal investigators information on program announcement 16-503 by emphasizing several key features and requirements of each track.

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Grant Opportunities

National Science Foundation

Grant Program: Energy-Efficient Computing: from Devices to Architectures (E2CDA)
Agency: National Science Foundation NSF 17-531
RFP Website: https://www.nsf.gov/pubs/2017/nsf17531/nsf17531.htm
Brief Description: There is a consensus across the many industries touched by our ubiquitous computing infrastructure that future performance improvements across the board are now severely limited by the amount of energy it takes to manipulate, store, and critically, transport data. While the limits and tradeoffs for this performance-energy crisis vary across the full range of application platforms, they have all reached a point at which evolutionary approaches to addressing this challenge are no longer adequate.

      Truly disruptive breakthroughs are now required, and not just from any one segment of the technology stack. Rather, due to the complexity of the challenges, revolutionary new approaches are needed at each level in the hierarchy. Furthermore, simultaneous co-optimization across all levels is essential for the creation of new, sustainable computing platforms. These simultaneous technical and organizational challenges have never been as complex or as critically important as they are now. The urgency of solving the multi-disciplinary technical challenges will require new methods of collaboration and organization among researchers.

      Therefore, a comprehensive and collaborative approach must be undertaken to maximize the potential for successfully identifying and implementing revolutionary solutions to break through the bottleneck of energy-constrained computational performance. Programmers, system architects, circuit designers, chip processing engineers, material scientists, and computational chemists must all explore these new paths together to co-design an optimal solution path.

The National Science Foundation (NSF) and the Semiconductor Research Corporation (SRC) recognize this need, and agree to embark on a new collaborative research program to support compelling research that is of paramount importance to industry, academia and society at large. This partnership will specifically support new research to minimize the energy impacts of processing, storing, and moving data within future computing systems, and will be synergistic with other research activities that address other aspects of this overarching energy-constrained computing performance challenge. The jointly supported research effort aligns with interagency initiatives and priorities, including the National Strategic Computing Initiative and the nanotechnology-inspired Grand Challenge for Future Computing.

Awards: Standard Grants. Anticipated funding amount: $6,000,000
Letter of Intent: Not Required
Full Proposal Submission Due Date: March 07, 2017
Contacts:
- Sankar Basu, Program Director, Computing & Communication Foundations Division, NSF, telephone: (703) 292-7843, email: sabasu@nsf.gov
- Dimitris Pavlidis, Program Director, Electrical, Communications & Cyber Systems Division, NSF, telephone: (703) 292-2216, email: dpavlidi@nsf.gov

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Grant Program: Innovations at the Nexus of Food, Energy and Water Systems (INFEWS)
Agency: National Science Foundation NSF 17-530
RFP Website: https://www.nsf.gov/pubs/2017/nsf17530/nsf17530.htm
Brief Description: Humanity is reliant upon the physical resources and natural systems of the Earth for the provision of food, energy, and water. It is becoming imperative that we determine how society can best integrate across the natural and built environments to provide for a growing demand for food, water and energy while maintaining appropriate ecosystem services. Factors contributing to stresses in the food and energy and water (FEW) systems include increasing regional and social pressures and governance issues as result of land use change, climate variability, and heterogeneous resource distribution. Interconnections and interdependencies associated with the FEW nexus create research grand challenges for understanding how the complex, coupled processes of society and the environment function now, and in the future. To meet these grand challenges, there is a critical need for research that enables new means of adapting to future challenges. The FEW systems must be conceptualized broadly, incorporating physical processes (such as built infrastructure and new technologies for more efficient resource utilization), natural processes (such as biogeochemical and hydrologic cycles), biological processes (such as agroecosystem structure and productivity), social/behavioral processes (such as decision making and governance), and cyber-components (such as sensing, networking, computation and visualization for decision-making and assessment). Investigations of these complex systems may produce discoveries that cannot emerge from research on food or energy or water systems alone. It is the synergy among these components in the context of sustainability that will open innovative science and engineering pathways to produce new knowledge, novel technologies and predictive capabilities to solve the challenges of scarcity and variability.

The overarching goal of INFEWS is to catalyze well-integrated interdisciplinary and convergent research to transform scientific understanding of the FEW nexus (integrating all three components rather than addressing them separately), in order to improve system function and management, address system stress, increase resilience, and ensure sustainability. The NSF INFEWS initiative is designed specifically to attain the following goals:

1. Significantly advance our understanding of the food-energy-water system through quantitative, predictive and computational modeling, including support for relevant cyberinfrastructure;
2. Develop real-time, cyber-enabled interfaces that improve understanding of the behavior of FEW systems and increase decision support capability;
3. Enable research that will lead to innovative solutions to critical FEW systems problems; and
4. Grow the scientific workforce capable of studying and managing the FEW system, through education and other professional development opportunities.

This initiative enables interagency cooperation on one of the most pressing problems of the millennium - understanding interactions across the FEW nexus - how it is likely to affect our world, and how we can proactively plan for its consequences. It allows the partner agencies - National Science Foundation (NSF) and the United States Department of Agriculture National Institute of Food and Agriculture (USDA/NIFA) and others - to combine resources to identify and fund the most meritorious and highest-impact projects that support their respective missions, while eliminating duplication of effort and fostering collaboration between agencies and the investigators they support.

Awards: Standard Grants. Anticipated funding amount: $2,500,000
Letter of Intent: Not Required
Full Proposal Submission Due Date: March 06, 2017
Contacts:
- Thomas Torgersen, Co-Chair, Directorate for Geosciences, telephone: 703-292-4738, email:ttorgers@nsf.gov
- David Corman, Directorate for Computer & Information Science & Engineering, telephone: 703-292-8754, email: dcorman@nsf.gov
- Carol Bessel, Directorate for Mathematical & Physical Sciences, telephone: 703-292-4906, email:cbessel@nsf.gov

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Grant Program: Cyber-Physical Systems (CPS)
Agency: National Science Foundation NSF 17-529
RFP Website: https://www.nsf.gov/pubs/2017/nsf17529/nsf17529.htm
Brief Description: Cyber-physical systems (CPS) are engineered systems that are built from, and depend upon, the seamless integration of computational algorithms and physical components. Advances in CPS will enable capability, adaptability, scalability, resiliency, safety, security, and usability that will far exceed the simple embedded systems of today. CPS technology will transform the way people interact with engineered systems -- just as the Internet has transformed the way people interact with information. New smart CPS will drive innovation and competition in sectors such as agriculture, energy, transportation, building design and automation, healthcare, and manufacturing.

The goal of the CPS program is to develop the core system science needed to engineer complex cyber-physical systems that people can use or interact with and depend upon. Some of these may require high-confidence or provable behaviors. The program aims to foster a research community committed to advancing research and education in CPS and to transitioning CPS science and technology into engineering practice. By abstracting from the particulars of specific systems and application domains, the CPS program seeks to reveal cross-cutting fundamental scientific and engineering principles that underpin the integration of cyber and physical elements across all application sectors. To expedite and accelerate the realization of cyber-physical systems in a wide range of applications, the CPS program also supports the development of methods, tools, and

hardware and software components based upon these cross-cutting principles, along with validation of the principles via prototypes and testbeds. We have also seen a convergence of CPS technologies and research thrusts that underpin Smart & Connected Communities (S&CC) and the Internet of Things (IoT). These domains offer new and exciting challenges for foundational research and provide opportunities for maturation at multiple time horizons.

In 2017, NSF is working closely with multiple agencies of the federal government, including the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T); the U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA), and through FHWA, the U.S. DOT Intelligent Transportation Systems (ITS) Joint Program Office (JPO); the National Aeronautics and Space Administration (NASA) Aeronautics Research Mission Directorate (ARMD); several National Institutes of Health (NIH) institutes and centers [including the National Institute of Biomedical Imaging and Bioengineering (NIBIB), Office of Behavioral and Social Sciences Research (OBSSR), National Cancer Institute (NCI), and National Center for Advancing Translational Sciences (NCATS)]; and the U.S. Department of Agriculture-National Institute of Food and Agriculture (USDA-NIFA, hereafter referred to as NIFA). Key goals are to identify basic CPS research directions that are common across multiple application domains, along with opportunities for accelerated transition to practice.

Awards: Total Funds Available: $31,000,000
- **Small** projects may be requested for a total of up to $500,000 for a period of up to 3 years. They are well suited to emerging new and innovative ideas that will have high impact on the field of cyber-physical systems.
- **Medium** projects may be requested for a total budget ranging from $500,001 to $1,000,000 for a period of up to four years. They are well suited to multi-disciplinary projects that accomplish clear goals requiring integrated perspectives spanning the disciplines.
- **Frontier** projects must address clearly identified critical CPS challenges that cannot be achieved by a set of smaller projects. Funding may be requested for a total of $1,000,001 to $7,000,000 for a period of 4 to 5 years

Letter of Intent: Not Required
Full Proposal Submission Due Date: February 20, 2017 – March 06, 2017
Contacts:
- David Corman, Program Director, CISE/CNS, telephone: (703) 292-8754, email:dcorman@nsf.gov
- Radhakisan Baheti, Program Director, ENG/ECCS, telephone: (703) 292-8339, email:rbaheti@nsf.gov
- Sankar Basu, Program Director, CISE/CCF, telephone: (703) 292-7843, email: sabasu@nsf.gov
- Bruce Hamilton, Program Director, ENG/CBET, telephone: (703) 292-7066, email:bhamilto@nsf.gov
- Bruce Kramer, Program Director, ENG/CMMI, telephone: (703) 292-5348, email:bkramer@nsf.gov

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Grant Program: Cyberinfrastructure for Emerging Science and Engineering Research (CESER)
Agency: National Science Foundation NSF PD 17-7684
RFP Website:
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505385&org=NSF&sel_org=NSF&from=fund

Brief Description: The overall goal of the Cyberinfrastructure for Emerging Science and Engineering Research (CESER) program is to foster the development of innovative cyberinfrastructure (CI) technologies and new means of leveraging existing CI resources to catalyze emerging areas of potentially transformative science and engineering research, including NSF priority areas, national strategic initiatives, and international collaborative research.

The CESER Program replaces the Strategic Technologies for Cyberinfrastructure (STCI) program. STCI's focus on supporting opportunities to advance technology across the CI ecosystem is incorporated into CESER with a new emphasis on enabling emerging science and engineering research areas.

A key programmatic objective of CESER is to support early-stage efforts by collaborative teams of domain scientists and cyberinfrastructure developers/implementers to identify and address cyberinfrastructure needs in new research areas through the development and deployment of pilot, experimental, and innovative hardware or software systems or other unique cyberinfrastructure activities that enable new pathways to discovery.

Another program objective is to encourage holistic, systematic, and multidisciplinary CI approaches to address new opportunities to enable science and engineering research. Projects that integrate multiple cyberinfrastructure disciplines – such as computing, data infrastructure, software, workflow systems, and networking - to address an emerging scientific challenge are particularly welcomed. CESER will also support projects that aim to expand the spectrum of research disciplines that, and users who, engage and contribute to a dynamic and enduring national research cyberinfrastructure ecosystem.

Eligible projects and unique activities should address a clearly identified and described scientific rationale, explain and support the potential for transformative impacts on science or engineering research, research training, education or broader impacts, and provide a convincing explanation of why the project is not suitable for other NSF programs or solicitations.

CESER variously employs existing NSF funding mechanisms to accomplish the program's goals such as support for EArly-concept Grants for Exploratory Research (EAGER), Conferences (workshops), Research Coordination Networks (RCNs), and targeted solicitations. Program interests and funding opportunities will be communicated to the NSF community via Dear Colleague Letters and program solicitations.

Before developing a proposal intended for this program, investigators are **strongly encouraged** to discuss their ideas with the cognizant program officer associated with the CESER program to ensure that CESER is the appropriate venue for the proposal. For general information about how to submit such proposals, please see the NSF *Proposal and Award Policies and Procedures Guide* (https://www.nsf.gov/pubs/policydocs/pappg17_1/nsf17_1.pdf).

Awards: Standard Grants.
Letter of Intent: Not Required
Full Proposal Submission Due Date: Anytime
Contacts:
- William L. Miller (CISE/ACI)   wlmiller@nsf.gov   (703) 292-7886

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Grant Program: Cybersecurity Innovation for Cyberinfrastructure (CICI)
Agency: National Science Foundation NSF 17-528
RFP Website:
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505159&org=NSF&sel_org=NSF&from=fund

Brief Description: Advancements in data-driven scientific research depend on trustworthy and reliable cyberinfrastructure. Researchers rely on a variety of networked technologies and software

tools to achieve their scientific goals. These may include local or remote instruments, wireless sensors, software programs, operating systems, database servers, high-performance computing, large-scale storage, and other critical infrastructure connected by high-speed networking. This complex, distributed, interconnected global cyberinfrastructure ecosystem presents unique cybersecurity challenges. NSF-funded scientific instruments, sensors and equipment are specialized, highly-visible assets that present attractive targets for both unintentional errors and malicious activity; untrustworthy software or a loss of integrity of the data collected by a scientific instrument may mean corrupt, skewed or incomplete results. Furthermore, often data-driven research, e.g., in the medical field or in the social sciences, requires access to private information, and exposure of such data may cause financial, reputational and/or other damage. Therefore, an increasing area of focus for NSF is the development and deployment of hardware and software technologies and techniques to protect research cyberinfrastructure across every stage of the scientific workflow. Full RFP NSF 17-528 will be published soon.

Awards: Standard Grants. Anticipated funding amount: $7,500,000 in FY17.

Full Proposal Submission Due Date: May 1, 2017

Contacts:
- Anita Nikolich anikolic@nsf.gov (703) 292-4551
- Kevin Thompson kthompso@nsf.gov (703)-292-4220

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Grant Program: Cyberlearning and Future Learning Technologies (Cyberlearning)
Agency: National Science Foundation NSF 17-520
RFP Website: https://www.nsf.gov/pubs/2017/nsf17520/nsf17520.htm
Brief Description: The purpose of the ***Cyberlearning and Future Learning Technologies*** program is to integrate opportunities offered by emerging technologies with advances in what is known about how people learn to advance three interconnected thrusts:
- **Cyber innovation**: Developing next-generation cyberlearning approaches through high-risk, high-reward advances in computer and information science and engineering;
- **Learning innovation**: Inventing and improving next-generation genres (types) of learning technologies, identifying new means of using technology for fostering and assessing learning, and proposing new ways of integrating learning technologies with each other and into learning environments to foster and assess learning; and
- **Advancing understanding of how people learn in technology-rich learning environments**: Enhancing understanding of how people learn and how to better foster and assess learning, especially in technology-rich learning environments that offer new opportunities for learning and through data collection and computational modeling of learners and groups of learners that can be done only in such environments.

The intention of this program is to advance technologies that specifically focus on the experiences of learners; innovations that simply focus on making teaching easier will not be funded. Proposals that focus on teachers or facilitators as learners are invited; the aim in these proposals should be to help teachers and facilitators capitalize on the affordances of technology and fundamental knowledge about how people learn to make the learning experiences of learners more effective.

Proposals are expected to address all three of the program's thrusts. Of particular interest are technological advances that (1) foster deep understanding of content coordinated with masterful learning of practices and skills; (2) draw in and encourage learning among populations not served well by current educational practices; and/or (3) provide new ways of assessing understanding, engagement, and capabilities of learners. It is expected that research funded by this program will shed light on how technology can enable new forms of educational practice. This

program does not support proposals that aim simply to implement and evaluate a particular software application or technology in support of a specific course.

Awards: Standard Grants. Anticipated funding amount: $6,000,000 in FY17.

Letter of Intent: Not Required

Full Proposal Submission Due Date: February 10, 2017

Contacts:

- Tatiana Korelsky, co-lead CISE, Program Officer, CISE/IIS, telephone: (703)292-8930, email: tkorelsk@nsf.gov
- Amy L. Baylor, co-lead EHR, Program Officer, EHR/DRL, telephone: (703) 292-5126, email: abaylor@nsf.gov
- William Bainbridge, Program Officer, CISE/IIS, telephone: (703)292-7470, email: wbainbri@nsf.gov

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National Institutes of Health

Grant Program: Innovative Programs to Enhance Research Training (IPERT) (R25)

Agency: National Institutes of Health PAR-17-070

RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-17-070.html

Brief Description: The NIH Research Education Program (R25) supports research educational activities that complement other formal training programs in the mission areas of the NIH Institutes and Centers. The over-arching goals of the NIH R25 program are to: (1) complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs; (2) enhance the diversity of the biomedical, behavioral and clinical research workforce; (3) help recruit individuals with specific specialty or disciplinary backgrounds to research careers in biomedical, behavioral and clinical sciences; and (4) foster a better understanding of biomedical, behavioral and clinical research and its implications.

The over-arching goal of this NIGMS Innovative Programs to Enhance Research Training (IPERT) R25 program is to support educational activities that complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs. This program is intended to support types of research education activities that cannot be supported by other NIGMS programs. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on:

- Courses for Skills Development: Support for short courses designed to develop scientific research skills. Support for academic development and enrichment activities designed to improve critical thinking and problem solving skills, communication skills and skills appropriate to lead effective research programs. Support for short courses in the application of emerging technologies or areas of science relevant to biomedical research. These courses could be in-person or provided electronically. Applications will not be accepted for courses that are or would become part of the standard/required curriculum of an academic degree program or institution or are from for-profit entities. The courses must be open to the biomedical community and not restricted to trainees from a single program, department or institution.
- Mentoring Activities: Activities designed to provide not only technical expertise, but also professional development, biomedical research career planning advice and insight to students, postdoctorates or early-career faculty. Activities to prepare participants with a working knowledge of the challenges and opportunities for a career in various biomedical research-related sectors or settings and to improve their skills to meet these challenges and opportunities.

- Outreach: Activities such as contemporary, research-based science/health education or dissemination of biomedical research findings to individuals, including those from underrepresented groups, in preparation for careers in research. Outreach could include courses for skills development, mentoring activities or both approaches. An example would be short courses or computer-based educational tools for developing scientists at any academic level, including faculty. Outreach activities could include support for travel awards to enable students and faculty to participate in conferences, symposia and workshops, provided training activities are included as part of the award;; and information dissemination.

IPERT applications should incorporate creative and innovative approaches within the plans for short courses, mentoring and outreach activities. Participation in an IPERT must be open to the biomedical research community and not restricted to potential participants (students, postdocs, early career faculty) from one program, department or institution. The activities may be designed to include participants from undergraduate to early career faculty stages, or may target the program activities for individuals at a particular research career stage. IPERT Programs designed for pre-college participants are a low priority for NIGMS.

Awards: There are no specific budget limitations; however, the requested direct costs must be reasonable, well documented, fully justified and commensurate with the scope and purpose of the proposed program for the intended outcome(s).

Letter of Intent: 30 days prior to application due date

Deadline: February 7, 2017; January 23, 2018; January 23, 2019, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date..

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Grant Program: Maximizing Access to Research Careers Undergraduate - Student Training in Academic Research (MARC U-STAR) (T34)
Agency: National Institutes of Health PAR-17-068
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-17-068.html
Brief Description: The overall goal of the NIH Ruth L. Kirschstein National Research Service Award (NRSA) program is to help ensure that a diverse pool of highly trained scientists is available in appropriate scientific disciplines to address the Nation's biomedical, behavioral, and clinical research needs. In order to accomplish this goal, NRSA training programs are designed to train individuals to conduct research and to prepare for research careers. More information about NRSA programs may be found at the Ruth L. Kirschstein National Research Service Award (NRSA)website.

Purpose and Background

The goal of this NRSA program is to provide structured training programs to prepare high-achieving, underrepresented students for doctoral programs in biomedical research fields. The mission of the National Institute of General Medical Sciences (NIGMS) is to support research that increases our understanding of life processes and lays the foundation for advances in disease diagnosis, treatment and prevention. To ensure the vitality and continued productivity of the research enterprise, NIGMS provides leadership in training the next generation of biomedical scientists, enhancing the pool of individuals from underrepresented backgrounds who are available to compete in the scientific workforce, and developing research capacities throughout the country. NIGMS seeks to enhance the pool of individuals from groups underrepresented in the biomedical workforce by providing training opportunities during multiple training and career

stages at varied institutions and educational settings across the country. By providing opportunities to students from underrepresented groups to pursue advanced training in the biomedical sciences, NIGMS strives to ensure that the future generation of researchers will draw from the entire pool of talented individuals, bringing different aptitudes, perspectives, creativity and experiences to address complex scientific problems.

Need for the Program

Every facet of the United States scientific research enterprise—from basic laboratory research to clinical and translational research to policy formation–requires superior intellect, creativity and a wide range of skill sets and viewpoints. NIH's ability to help ensure that the nation remains a global leader in scientific discovery and innovation depends upon having a pool of highly talented scientists from diverse backgrounds who will help to further NIH's mission. However, in spite of advancements in scientific research, some populations have not had access to cutting-edge research and training opportunities, and do not participate fully in the biomedical sciences research workforce. These underrepresented groups include individuals from underrepresented racial and ethnic groups, individuals with disabilities, and individuals from disadvantaged backgrounds (at the undergraduate level and below), as described in NOT-OD-15-053.

Currently these groups are not only underrepresented in science, technology and engineering (NSF, 2016), their underrepresentation in these fields also increases throughout the training stages. For example, students from certain racial and ethnic groups, including Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders currently comprise ~39 percent of the college age population (Census Bureau), but earn only ~17 percent of bachelor's degrees and ~11 percent of the Ph.D.s in the biological sciences (NSF, 2016).

Goals and Outcomes

The overarching goal of the MARC program is to enhance the pool of students from underrepresented groups who successfully complete baccalaureate and Ph.D. biomedical degrees. To accomplish this goal, institutional MARC programs should make available structured training activities such as authentic research experience, academic enhancement, skills development, and mentoring to all MARC trainees. It is expected that upon completion of the undergraduate degree, MARC participants will apply to and complete doctoral degree programs in biomedical research fields, and ultimately participate in the national biomedical workforce. In doing so, the expectation is that by supporting undergraduate student research training, the MARC program will help reduce the gap in the completion of Ph.D. degrees between underrepresented and non-underrepresented students in the biomedical sciences. At the institutional level, the MARC program should develop undergraduate students who are proficient in biomedical science for the purpose of training the next generation of the modern research workforce. Furthermore, the institution is expected to identify and address the barriers that might impede the participation and retention of all students, with attention to the types of issues that students from underrepresented backgrounds face.

Since MARC participants should have an interest in obtaining a Ph.D. degree, NIGMS expects that the following objectives will be achieved:

1. At least 90% of MARC U-STAR trainees will graduate with a bachelor's degree in a STEM field; and
2. At least 60% of MARC U-STAR trainees, within three years of graduation, will matriculate into a biomedical Ph.D. or combined M.D./Ph.D. program at a research-intensive institution and at least 80% of those matriculants will obtain the degree(s).

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project.

Letter of Intent: Not required
Deadline: May 24, 2017; May 24, 2018, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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Grant Program: BRAIN Initiative: Targeted BRAIN Circuits Projects - TargetedBCP (R01) (R21) and (U01)
Agency: National Institutes of Health
BRAIN Initiative: Targeted BRAIN Circuits Projects - TargetedBCP (R01) RFA-NS-17-014
RFA-NS-17-015, R21 Exploratory/Developmental Research Grant
RFA-NS-17-018, U19 Research Program – Cooperative Agreements
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-NS-17-014.html
Brief Description: The primary goal of this FOA is to solicit research projects using innovative, methodologically-integrated approaches to understand how circuit activity gives rise to mental experience and behavior. The activity of neural circuits is the substrate of cognitive processes such as perception, attention, reasoning, intention, decision-making, and emotion. These internal activities are translated into patterns of activation that support simple motor behaviors, as well as more complex behaviors such as navigation and communication. Dysfunction of these large systems of neurons due to disease, injury, or developmental anomaly is the basis of neural and mental disorders. A mission of the NIH BRAIN Initiative is to understand how large scale neural systems contribute to cognitive and neurological function in both health and disease.
Targeted Brain Circuit Project R01 awards will support an individual laboratory or a small multi-PD/PI group. Supported projects will reflect the NIH BRAIN Initiative interests in the application of cutting-edge methodologies in the service of understanding brain circuit function at cellular and sub-second levels of resolution in ethologically relevant behaviors. Applications should offer specific, feasible research goals as endpoints within a 5-year term.
The proposed studies should relate to at least one of the seven major topic areas of the BRAIN 2025 report:
1. Discovering diversity: Identify and provide experimental access to the different cell types to determine their roles in the context of circuit function.
2. Maps at multiple scales: Generate structural and functional circuit diagrams that can span resolution from synapses to the whole brain.
3. The brain in action: Produce a dynamic picture of the functioning brain by developing and applying improved methods for large-scale monitoring of neural activity.
4. Demonstrating causality: Link brain activity to behavior with precise interventional tools that change neural circuit dynamics.
5. Identifying fundamental principles: Produce conceptual foundations about circuit dynamics and functional connectivity for understanding the biological basis of mental processes through development of new theoretical and data analysis tools.
6. Advancing human neuroscience: Develop innovative technologies to understand brain circuits and ensembles of circuits that inform understanding of the human brain and mechanisms for treating its disorders.
7. From BRAIN Initiative to the brain: Integrate new technological and conceptual approaches produced in Goals #1-6 to discover how dynamic patterns of neural activity are transformed into cognition, emotion, perception, and action in health and disease.

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project.

Letter of Intent: 30 days prior to the application due date

Deadline: March 8, 2017, by 5:00 PM local time of applicant organization. All [types of non-AIDS applications](#) allowed for this funding opportunity announcement are due on this date.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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Grant Program: Exploratory Research for Technology Development (R21)
Agency: National Institutes of Health PAR-17-046
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-17-046.html

Brief Description: For the purpose of this FOA, technology refers to tools that enable research. This includes laboratory instruments and other devices, algorithms and software, chemical reagents and processes by which biomedically related molecules are produced and modified, and the manipulation of biological systems to produce or become research tools. This FOA calls for exploratory technology development predicated on a broad need or challenge in biomedical research that can be described explicitly. This need should be beyond the ability of the current technology development regime to meet. It should be clear that something fundamentally different is needed. The proposed technology should have the potential to address basic biomedical research needs or technical problems that occur broadly across multiple systems or diseases. Specific examples may be cited. Exploratory research into technologies specific to only one disease or system are not appropriate for this FOA.

No Preliminary Data: Availability of preliminary data is an indication that the proposed project has advanced beyond the exploratory stage defined by this program, and will make the application unsuitable for this funding opportunity. Consideration should be given to submitting such projects to the companion R01 program ([PAR-17-045](#)).

High-Risk Exploratory Research: Applications through this FOA for exploratory research projects may propose a single specific solution to a broadly stated biomedical research need, with the goal of determining the feasibility of that approach. Alternatively, a proposed project may take a broader approach that will explore several possible solutions, leading to an improved understanding of the best technical avenues to pursue in order to create a new capability. This less directed approach may lead to a better understanding of the relative merits or likelihood of success of multiple potential approaches to be pursued in developing a technology.

This program will support proof-of-principle research leading to advances in technology. Because new ideas are essential to this process, the projects will entail a high degree of risk or novelty, which will be offset by a correspondingly high potential impact. However, the possible impact is unlikely to be immediate. Substantial additional development of the technology after completion of the project is likely to be necessary. The program will recognize and reward high risk approaches with the potential for significant impact.

No Biological Aims: Biomedical relevance is an essential element of NIH research. However, the exploratory stage of technology development should not include immediate short-term application of nascent technologies to challenging biomedical research questions because an insistence on explicit linkage to a specific research problem and the immediate demonstration of an immature technology's effectiveness in that context can distort the technology development process. It can also diminish focus on development of genuinely innovative technology in favor of incremental improvements to existing technologies. In the early stages of technology development, insistence on biomedical applications is counterproductive. Therefore, in this

program, application to specific biomedical questions in the timeframe of the proposed project is considered beyond the scope of the program, and should not be included.

Milestones: A milestone is a defined event, achievement, or important stage that is used to indicate the progress of a project. Milestones should be descriptive of what will be done and when it will be completed.

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project.

Letter of Intent: Not Required

Deadline: Standard dates apply , by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates. Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

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Department of Defense/US Army/DARPA/ONR

Grant Program: Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology
Agency: Office of Naval Research ONR BAA N00014-17-S-B001
Website: http://www.onr.navy.mil/~/media/Files/Funding-Announcements/BAA/2017/N00014-17-S-B001.ashx
Brief Description: The ONR seeks a broad range of proposals for augmenting existing or developing innovative solutions that directly maintain, or cultivate a diverse, world-class STEM workforce in order to maintain the U.S. Navy and Marine Corps' technological superiority. The goal of any proposed effort must provide solutions that will establish and maintain pathways of diverse U.S. citizens who are interested in uniformed or civilian DoN (or Navy and Marine Corps) STEM workforce opportunities. As the capacity of the DoN Science and Technology (S&T) workforce is interconnected with the basic research enterprise and STEM education system, ONR recognizes the necessity to support efforts that can jointly improve STEM student outcomes and align with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students including active learning approaches and incorporating 21st century skills. Projects must aim to increase student engagement in STEM and persistence of students in STEM degrees, while improving student technical capacity. ONR encourages proposals to utilize current STEM educational research for informing project design and advancing our understanding of how and why students choose STEM careers and opportunities of naval relevance.While this announcement is relevant for any stage of the STEM educational system, funding efforts will be targeted primarily toward the future and current DoN (naval) STEM workforce in High School, all categories of Post-Secondary institutions, the STEM research enterprise, and efforts that enhance the current naval STEM workforce and its mission readiness.
Awards: Various
Full Proposal Deadline: Grant proposals submitted Use this start date
October 1 through December 31, 2016 March 1, 2017
January 1 through March 31, 2017 July 1, 2017
April 1 through June 30, 2017 September 1, 2017
July 1 through September 30, 2017 January 1, 2018
Contact Information: Further information may be found at
(http://www.onr.navy.mil/ScienceTechnology/Departments/Code-30/All-Programs/C4.aspx).

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Department of Energy

Grant Program: Buildings Energy Efficiency Frontiers & Innovation Technologies (BENEFIT) – 2017
Agency: Department of Energy   DE-FOA-0001632
Website: https://eere-exchange.energy.gov/default.aspx#FoaId8e546c7c-c277-4c71-aae3-f62e15a95aef
Brief Description: The Emerging Technologies (ET) Program of the Building Technologies Office (BTO) supports applied research and development (R&D) for technologies and systems that contribute to reductions in building energy consumption. In the United States, the ET Program has the broad aim of supporting the development of cost-effective technologies that can reduce aggregate building energy use intensity by 30% by 2020, and 45% by 2030, relative to the consumption of 2010 energy-efficient technologies. The ET Program strives to meet this goal by researching and developing cost-effective, energy-efficient technologies to be introduced into the marketplace. A portion of the ET budget provides support for the Department of Energy (DOE) national laboratories in five areas: solid-state lighting, heating, ventilation, air-conditioning, and refrigeration (HVAC&R) (includes water heating and appliances), sensors & controls, windows & envelope, and modeling & tools. The remaining budget is distributed through competitive solicitations, including Funding Opportunity Announcements (FOAs) like this one, to allow all interested parties (corporations, universities, non-profits, as well as the national labs) to innovate advanced technologies that lead to reduced primary energy consumption in buildings.
In prior years, the BENEFIT FOA consisted of two sections (Innovations: early-stage; Frontiers: later-stage, roadmap-driven) to complement the core funding provided by the program ([1], [2], [3], below). This FOA consists of four topic areas within these two sections (e.g., "Innovations" and "Frontiers"), as well as a new third "Scale-up" section for pre-commercial prototype development. Two targeted "Frontiers" topics are focused on Advanced HVAC&R and Miscellaneous Electric Loads (MELs), and two open topics are focused on early-stage R&D applications ("Innovations") and pre-commercial prototype development and scale-up ("Scale-up"), respectively. This pursuit of early-stage (Innovations), as well as later-stage (Scale-up) investments in the open topics will provide balance to the BTO R&D portfolio and targeted technology topic and program areas.
Awards: Up to $3,000,000; Anticipated Funding: $19,500,000
Letter of Intent: Applicants that experience issues with submissions PRIOR to the FOA Deadline: In the event that an Applicant experiences technical difficulties with a submission, the Applicant should contact the eXCHANGE helpdesk for assistance (exchangehelp@hq.doe.gov). The eXCHANGE helpdesk and/or the EERE eXCHANGE System Administrators (eXCHANGE@ee.doe.gov) will assist the Applicant in resolving all issues.
Full Proposal Deadline: Mar 08, 2017 Submission Deadline for Full Application: 03/08/2017 at 5:00pm ET
Informational Webinar: Informational Webinar: The Informational Webinar mentioned in the FOA will be held on December 6, 2016 at 3:00 PM ET Eastern Standard Time. Please click or copy and paste this link in your browser for registration: https://attendee.gotowebinar.com/register/5505829044318937859
Contact Information:
  • EERE-ExchangeSupport@hq.doe.gov
For technical issues related to the EERE Exchange website.
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Grant Program: Fuel Cells Technologies Office Annual Funding Opportunity Announcement
Agency: Department of Energy   DE-FOA-0001647
Website: https://eere-exchange.energy.gov/default.aspx#FoaIdf5ced284-2764-4570-977a-a9187a8e7be7

Brief Description: This Funding Opportunity Announcement (FOA) is for the research and development of low-cost hydrogen production, onboard hydrogen storage, and proton exchange membrane fuel cells to advance the widespread commercialization of fuel cell electric vehicles. Selected projects will leverage national lab consortia launched under DOE's Energy Materials Network (EMN) this past year, in support of DOE's materials research and advanced manufacturing priorities. The fuel cells market is growing rapidly, and has seen an annual growth rate of 30% every year since 2010 as well as $2 billion annual revenue in 2014. Light duty vehicles are an emerging application for fuel cells that already enable 95% lower petroleum consumption per mile than conventional internal combustion engine vehicles. Applicants to this funding opportunity announcement (FOA) will collaborate with national lab consortia launched within the EMN. The EMN consortia have been established to make unique, world-class capabilities at the national laboratories more accessible to industry, facilitating collaborations that will expedite the development and manufacturing of advanced materials for commercial markets. The FOA topics include: • Topic 1: PGM-free Catalyst and Electrode R&D – this topic will leverage the Electrocatalysis Consortium (ElectroCat) to accelerate the development of catalysts made without platinum group metals (PGM-free) for use in fuel cells for transportation. • Topic 2: Advanced Water Splitting Materials – this topic will leverage the HydroGEN Consortium to accelerate the development of advanced water splitting materials for hydrogen production, with an initial focus on advanced electrolytic, photoelectrochemical, and solar thermochemical pathways. • Topic 3: Hydrogen Storage Materials Discovery – this topic will leverage the Hydrogen Materials—Advanced Research Consortium (HyMARC) to address unsolved scientific challenges in the development of viable solid-state materials for hydrogen storage onboard fuel cell electric vehicles (FCEVs). • Topic 4: Precursor Development for Low-Cost, High-Strength Carbon Fiber for Use in Composite Overwrapped Pressure Vessel Applications – this topic will aim to reduce the cost of onboard hydrogen storage necessary for FCEVs. Applicants for this topic will be encouraged to collaborate with LightMAT, a consortium launched by the DOE Vehicle Technologies Office to enable light-weighting of vehicles through the development of high-strength steels and carbon fiber. The full FOA is posted on the EERE Exchange website at https://eere-exchange.energy.gov. To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange, EERE's online application portal. Information on where to submit questions regarding the content of the announcement and where to submit questions regarding submission of applications is found in the full FOA posted on the EERE Exchange website. The Exchange system enforces hard deadlines for Concept Paper and Full Application submissions. The APPLY and SUBMIT buttons automatically disable at the defined submission deadlines. The intention of this design is to consistently enforce a standard deadline for all applicants. Applicants that experience issues with submissions PRIOR to the FOA Deadline: In the event that an Applicant experiences technical difficulties with a submission PRIOR to the deadline, the Applicant should contact the eXCHANGE helpdesk for assistance (EERE‐ExchangeSupport@hq.doe.gov). The eXCHANGE helpdesk &/or the EERE Exchange System Administrators (Exchange@ee.doe.gov) will assist the Applicant in resolving all issues.

Awards: Various
Concept Paper Deadline: December 20, 2016; 5:00pm ET
Full Proposal Deadline: February 21, 2017; 5:00pm ET

Contact Information:
- EERE-ExchangeSupport@hq.doe.gov

For technical issues related to the EERE Exchange website.
- FY17FCTOofficewidefoa@ee.doe.gov

For questions regarding the content of this FOA.

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NASA

Grant Program: ROSES 2016: Advanced Information Systems Technology
Agency: NASA NNH16ZDA001N-AIST
 Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={FFB54233
-DF18-5F45-939D-2569C4C5B2EE}&path=init

Brief Description: The Earth is a vast, complex, dynamic, interconnected system. Information systems technologies play an essential role in our ability to understand, to forecast, and to predict the Earth system's behavior through the generation, management, and scientific exploitation of the very large amounts of data and information from space-, airborne-, and ground-based sensors, as well as model output. Advances in information systems impact all Earth Science focus areas:

• Atmospheric Composition
• Earth Surface and Interior
• Climate Variability and Change
• Water and Energy Cycle
• Carbon Cycle & Ecosystems
• Weather

The Earth Science Technology Office (ESTO) manages the early development of advanced technologies and applications that are needed for cost-effective NASA Earth Science Division (ESD) missions. ESTO plays a major role in shaping Earth science research and application programs of the future. These important technology investments enable promising scientific and engineering concepts to be explored. ESTO ensures its technology programs create an effective balance of investments by coordinating across missions and science focus areas to define technology needs of NASA's Earth Science Division.

The goals of the Advanced Information Systems Technology (AIST) program are to identify, develop, and demonstrate advanced information system technologies that:

- Reduce the risk, cost, size, and development time for Earth science space-based, airborne, and ground-based information systems,
- Increase the accessibility and utility of science data, and
- Enable new observations and information products. The AIST is focused on maturing technology projects early in the Technology Readiness Level (TRL) cycle (2 to 4) and to mature the technologies (typically TRL 6) for potential infusion into the appropriate science, applications, and mission communities

Awards: Available amount: $12,500,000
Letter of Intent: December 21, 2016
Full Proposal Deadline: February 16, 2017
Contact: Michael Little Earth Science Technology Office Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 E-mail: Michael.M.Little@nasa.gov

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National Endowment of Humanities

Grant Program: Public Scholar Program
Agency: National Endowment of Humanities
 Website: https://www.neh.gov/grants/research/public-scholar-program
Brief Description: The Public Scholar Program supports well-researched books in the humanities intended to reach a broad readership. Although humanities scholarship can be specialized, the humanities also strive to engage broad audiences in exploring subjects of general interest. They seek to deepen our understanding of the human condition as well as current conditions and contemporary problems. The Public Scholar Program aims to encourage scholarship that will be of broad interest and have lasting impact. Such scholarship might present a narrative history, tell the stories of important individuals, analyze significant texts, provide a synthesis of ideas, revive interest in a neglected subject, or examine the latest thinking on a topic. Books supported by this program must be grounded in humanities research and scholarship. They must address significant humanities themes likely to be of broad interest and must be written in a readily accessible style. Making use of primary and/or secondary sources, they should open up important and appealing subjects for a wide audience. The challenge is to make sense of a significant topic in a way that will appeal to general readers. Applications to write books directed primarily to scholars are not appropriate for this program.

By establishing the Public Scholar Program, NEH entered a long-term commitment to encourage scholarship in the humanities for general audiences. The program is open to both individuals affiliated with scholarly institutions and independent scholars or researchers. Projects may be at any stage of development.
Awards: The Public Scholar Program supports continuous work over a period of six to twelve months. Awards may be held part time or full time (or part time for some months and full time for other months). Successful applicants receive a stipend of $4,200 per full-time month. The maximum stipend is $50,400 for a twelve-month period. Awards will be reduced to reflect the smaller time commitment when recipients work part time or for less than twelve months. Recipients must work at least half-time on their projects for the entire period of the grant. No grant may exceed twelve months. Recipients who work full-time on their projects must forgo other major activities, including teaching. Applicants should request award periods that suit their schedules and the needs of their projects. Requesting an award period shorter than twelve months will not improve an applicant's chance of receiving an award.
Proposal Deadline: February 1, 2017
Contact: Division of Public Programs National Endowment for the Humanities 400 Seventh Street, SW Washington, DC 20506 202-606-8269 publicpgms@neh.gov publicpgms@neh.gov
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Grant Program: Public Humanities Projects
Agency: National Endowment of Humanities
 Website: https://www.neh.gov/grants/public/public-humanities-projects
Brief Description: Public Humanities Projects grants support projects that bring the ideas and insights of the humanities to life for general audiences. Projects must engage humanities scholarship to analyze significant themes in disciplines such as history, literature, ethics, and art, or to address challenging issues in contemporary life. NEH encourages projects that involve members of the public in collaboration with humanities scholars or that invite contributions from the community in the development and delivery of humanities programming. This grant program supports a variety of forms of audience engagement. Applications should follow the parameters set out below for one of the following three formats: • Community Conversations: This format

supports one- to three-year-long series of community-wide public discussions in which diverse residents creatively address community challenges, guided by the perspectives of the humanities. • Exhibitions: This format supports permanent exhibitions that will be on view for at least three years, or travelling exhibitions that will be available to public audiences in at least two venues in the United States (including the originating location). • Historic Places: This format supports the interpretation of historic sites, houses, neighborhoods, and regions, which might include living history presentations, guided tours, exhibitions, and public programs. NEH encourages projects that explore humanities ideas through multiple formats. Proposed projects may include complementary components that deepen an audience's understanding of a subject: for example, a museum exhibition might be accompanied by a website, mobile app, or discussion programs. Your application must identify one primary format for your project and follow the application instructions for that format.

Awards: Applicants may also request a combination of outright and federal matching funds. For example, if an applicant is requesting $40,000 in NEH funds, and the applicant includes in its cost sharing $5,000 from an eligible third-party donor, the applicant should request $5,000 in federal matching funds. The balance of the NEH request ($35,000) would then be for outright funds. NEH may offer funding at a different level than that requested. In some instances, NEH may offer federal matching funds only, or it may offer a combination of federal matching and outright funds in response to a request for outright funds.

Proposal Deadline: January 11, 2017

Contact: Division of Public Programs National Endowment for the Humanities 400 Seventh Street, SW Washington, DC 20506 202-606-8269 publicpgms@neh.gov publicpgms@neh.gov

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Vodafone Americas Foundation

Grant Program: Wireless Innovation Project
Agency: Vodafone Americas Foundation
 Website: http://vodafone-us.com/wireless-innovation-project/about-wip/
Brief Description: The Vodafone Wireless Innovation Project™ (the "competition") seeks to identify and fund the best innovations using wireless related technology to address critical social issues around the world. Project proposals must demonstrate significant advancement in the field of wireless-related technology applied to social benefit use. The competition is open to projects from universities and nonprofit organizations based in the United States. Although organizations must be based in the United States, projects may operate and help people outside of the United States.

- Applicants must demonstrate a multi-disciplinary approach that uses an innovation in wireless-related technology to address a critical global issue in one or more of the following areas:

Social Issue Areas
Access to communication
Education
Economic development
Environment
Health
Technical Issue Areas
Connectivity
Energy
Language or Literacy hurdles

Ease of use
- The project must be at a stage of research where an advanced prototype or field/market test can occur during the award period.
- The technology should have the potential for replication and large scale impact.
- Teams should have a business plan or a basic framework for financial sustainability and rollout..

Awards: The Vodafone Americas Foundation™ designed the Wireless Innovation Project™ as a competition to promote innovation and increase implementation of wireless related technology for a better world. Total awards up to $600,000 will be available to support projects of exceptional promise that meet our eligibility criteria. The application period usually opens in October or November — check the online application for exact dates.

Proposal Deadline: To submit a proposal, Applicants must first successfully complete the Eligibility Questionnaire. Eligible Applicants will then receive the URL for the online application via e-mail and be asked to create a username and password which will enable them to work on their proposal online. The application consists of multiple narrative questions and a project budget spreadsheet that Applicants must complete and submit. All information must be submitted through the on-line application.

Submissions will be accepted from 9:00 a.m. Pacific Time on November 1, 2016 to 11:59 p.m. Pacific Time on March 6, 2017 (the "Entry Period"). See the Project Timeline for further dates and details

Contact: Eric Blitz, Associate Director for Development, Corporate and Foundation Relations at NJIT at eric.blitz@njit.edu

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