

NJIT Research Newsletter

Issue: ORN-2017-02

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/>.

Office of Research Announcement

The Office of Research has been reorganized to provide streamlined research related infrastructure support and functions over the complete spectrum of services from grant opportunities alerts and proposal submission to grant management and closing. A complete listing of Office of Research staff is posted on the NJIT Research website with the Contact Us tab (<http://www5.njit.edu/research/contact/>). A listing of assignments of staff members for specific research support functions and services for departments, centers and colleges is also posted under the Contact Us tab: <http://www5.njit.edu/research/research-staff-assignments/>.

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Save The Date! Office of Research Events Calendar: Spring 2017

Research Showcases and Presidential Research Forums:

Event: Inauguration of NJIT Institute of Brain and Neuroscience Research

When: March 6, 2017; 10.00 AM – 2.30 PM

Where: Ballroom A/B/Atrium

Keynote Speaker: Col. Sidney Hinds, MD, DoD Brain Health Research Program Coordinator, Medical Research and Materiel Command

Event: Panel Discussion: NSF Proposal Preparation and Review: Intellectual Merit and Broader Impact

When: March 7, 2017; 1.00 PM – 3.00 PM

Where: Campus Center Atrium

Panel Speakers:

Dr. Jennifer Slimowitz Pearl, Program Director, Division of Mathematical Sciences (DMS), NSF

Dr. Bernice Anderson, Senior Advisor, Office of Integrative Activities and Program Director- INCLUDES, NSF

Dr. Melvin Hall, Board Member, American Evaluation Association

Event: Faculty Research Showcase and Presidential Forum

When: March 28, 2017; 10.00 AM – 2.30 PM

Where: Ballroom A/B/Gallery

Keynote Speaker: James Gallarda, PhD, Senior Program Officer, Diagnostics at Bill & Melinda Gates Foundation

Event: Innovation Day Symposium (Student Research and Innovation Showcase)

When: April 10, 2017; 9.00 AM – 12.00 PM

Where: Ballroom A/B/Atrium

Keynote Speaker: Bill Huffnagle, President, Reconstructive Division at Stryker Orthopaedics

Event: Faculty Research Advisory Board Meeting

When: April 11, 2017; 1.00 PM – 2.00 PM

Where: Ballroom B

Event: Science and Technology Forum: Big Data Analytics: Current and Future Trends

When: April 12, 2017; 1.00 PM – 2.00 PM

Where: Ballroom B

Panel Speaker: Ms. Terry Christiani, Product Marketing Manager, [Microsoft](#)

Institutional Review Board (IRB) and Institutional Biosafety Committee (IBC) Meetings

February 8, 2017	IRB Meeting	11:00-1:00	590 Fenster Hall
March 8, 2017	IRB Meeting	11:00-1:00	590 Fenster Hall
April 12, 2017	IRB Meeting	11:00-1:00	590 Fenster Hall
May 10, 2017	IRB Meeting	11:00-1:00	590 Fenster Hall
February 15, 2017	IBC Meeting	11:00-1:00	230 Campus Center
March 15, 2017	IBC Meeting	11:00-1:00	235 Campus Center
April 19, 2017	IBC Meeting	11:00-1:00	235 Campus Center
May 17, 2017	IBC Meeting	11:00-1:00	235 Campus Center

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: STEM + Computing Partnerships (STEM+C); Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA)

NIH: NIDA Core "Center of Excellence" Grant Program (P30); Development of Socially-Assistive Robots (SARs) to Engage Persons with Alzheimer's Disease (AD) and AD-Related Dementias (ADRD), and their Caregivers (R43/R44); Jointly Sponsored Ruth L. Kirschstein National Research Service Award Institutional Predoctoral Training Program in the Neurosciences (T32)

Department of Defense/US Army/DARPA/ONR: Diverse Collegiate Research and Development Collaboration Program

Department of Energy: Creating Innovative and Reliable Circuits Using Inventive Topologies and Semi Conductors (CIRCUITS)

NASA: ROSES 2016: Fellowships for Early Career Researchers

National Endowment of Humanities: Institutes for Advanced Topics in the Digital Humanities

Recent Research Grant and Contract Awards

Congratulations to faculty and staff on receiving research grant and contract awards!

PI: Bryan Pfister (PI)

Department: Biomedical Engineering

Grant/Contract Project Title: Novel Cellular Approach to Study Acute Neuronal Hyperexcitability in a Traumatic Brain Injury Model

Funding Agency: NIH

Duration: 07/01/16-06/30/17

PI: Boris Khusid (PI)

Department: Chemical, Biological and Pharmaceutical Engineering

Grant/Contract Project Title: Kinetics Of Electric Field-Driven Phase Transitions In Polarized Colloids

Funding Agency: NASA

Duration: 08/23/13-08/22/18

PI: Bin Chen (PI)

Department: Center for Solar Terrestrial Research

Grant/Contract Project Title: NSF CAREER: Probing Energy Release in Solar Explosive Events with New Generation Radio Telescopes

Funding Agency: NSF

Duration: 01/15/17-12/31/21

PI: Donald Sebastian (PI)

Department: NJII

Grant/Contract Project Title: HIT Environmental Scan

Funding Agency: NJ Dept Human Services

Duration: 10/01/16-06/30/17

New Patents Issued (October – December, 2017)

Patent: Measurement Of Clock Skew Between Two Remote Hosts Connected Through Computer Networks

Inventors: Rojas-Cessa Roberto; Salehin, Khondaker

US Patent #: 9501093 Issued 11/22/2016

Abstract: Technologies are generally described for measuring clock skew between two remote hosts connected through a computer network. According to some examples, pairs of probe packets, also referred to as a compound probe, may be transmitted over an end-to-end path in

both directions (forward and reverse paths) to measure a gap value at the end nodes for clock skew estimation. Compound probes may arrive at the end nodes with a zero dispersion gap (no separation) and the gap values along the forward and reverse paths may be determined by a capacity of the links connected to the end nodes added to the clock speeds of the measuring nodes upon arriving at the end nodes. The link capacity is a constant network parameter. Thus, the ratio of the measured gap values may provide an estimate of clock speed discrepancy between the end nodes.

Patent: System And Method For A Piezoelectric Scaffold For Tissue Growth And Repair

Inventors: Arinzeh, Treena L.; Collins, George; Lee, Yee-Shuan

US Patent #: 9476026 Issued 11/25/2016

Abstract: Provided is an electroactive structure and method for growing isolated differentiable cells comprising a three dimensional matrix of fibers formed of a biocompatible synthetic piezoelectric polymeric material, wherein the matrix of fibers is seeded with the isolated differentiable cells and forms a supporting scaffold for growing the isolated differentiable cells, and wherein the matrix of fibers stimulates differentiation of the isolated differentiable cells into a mature cell phenotype on the structure.

Patent: System And Method For Superabsorbent Material

Inventors: Arinzeh, Treena L.; Collins, George; Joshi, Bhavita

US Patent #: 9504987 Issued 11/29/2016

Abstract: A hydrogel matrix and an osmotically active material immobilized in the matrix can be combined into superabsorbent preparations that are capable of adsorbing large amounts of water. The superabsorbent preparations of the invention have advantages in the use of absorbent materials for physiological fluids, such as diapers, incontinence products, wound dressings and the like, as well as agricultural and environmental applications. In addition, biodegradable superabsorbents of the invention can be prepared.

Patent: Trading Spectrum For Energy Savings In Green Cognitive Cellular Networks

Inventors; Ansari, Nirwan; Han, Tao

US Patent #: 9516589 Issued 12/6/2016

Abstract: Technologies are generally described for reducing overall power consumption of a wireless network such as a cellular network through spectrum trading. According to some examples, spectrum may be shared between primary base stations (PBSs) and secondary base stations (SBSs) to reduce a power consumption of PBSs and increase the spectral efficiency of cellular networks. A PBS may share a portion of its licensed bandwidth with SBSs, to provide data services to primary users (PUs) within SBSs' coverage area. Due to their proximity to the PUs, the SBSs may satisfy the PUs' quality of service (QoS) requirements by utilizing a portion of the allocated bandwidth. Thus, PBSs may reduce their power consumption by offloading some of the PUs to SBSs. Because the SBSs typically use lower power compared to the PBS, the overall power consumption of the network may be reduced as well.

Patent: System And Method For Neural Stimulation Via Optically Activated Floating Microdevices

Inventors: Sahin, Mesut; Abdo, Ammar; Freedman, David; Unlu, Selim

U S Patent #: 9526904 Issued 12/27/2016 (Joint with Boston U)

Abstract: Stimulation of the central nervous system can be useful for treating neurological disorders. Wireless neurostimulating devices have the benefit that they can float in tissue and do not experience the sheering caused by tethering tension that connecting wires impose on the

stimulators. An optically powered, logic controlled, CMOS microdevice that can decode telemetry data from an optical packet is a way of implementing wireless, addressable, microstimulators. Through the use of an optical packet, different devices can be addressed for stimulation, allowing spatially selective activation of neural tissue. The present invention, involves such a neural stimulation device, specifically an optically powered CMOS circuit that decodes telemetry data and determines whether it has been addressed.

In the News...

(National and Federal News Related to Research Funding and Grant Opportunities)

Medium-Term Renewable Energy Market Report 2016: The International Energy Agency reported that it was significantly increasing its five-year growth forecast for renewables thanks to strong policy support in key countries and sharp cost reductions. Renewables have surpassed coal last year to become the largest source of installed power capacity in the world. The latest edition of the IEA's Medium-Term Renewable Market Report now sees renewables growing 13% more between 2015 and 2021 than it did in last year's forecast, due mostly to stronger policy backing in the United States, China, India and Mexico. Over the forecast period, costs are expected to drop by a quarter in solar PV and 15 percent for onshore wind. Last year marked a turning point for renewables. Led by wind and solar, renewables represented more than half the new power capacity around the world, reaching a record 153 Gigawatt (GW), 15% more than the previous year. Most of these gains were driven by record-level wind additions of 66 GW and solar PV additions of 49 GW. About half a million solar panels were installed every day around the world last year. In China, which accounted for about half the wind additions and 40% of all renewable capacity increases, two wind turbines were installed every hour in 2015. Renewables are expected to cover more than 60% of the increase in world electricity generation over the medium term, rapidly closing the gap with coal. Generation from renewables is expected to exceed 7600 TWh by 2021 -- equivalent to the total electricity generation of the United States and the European Union put together today. For more information please visit <http://www.iea.org/newsroom/news/2016/october/medium-term-renewable-energy-market-report-2016.html>

More Nano-Inspired Grand Challenges: In 2015, the White House endorsed a plan for transformational computing capabilities combining innovations in multiple disciplines: "Create a new type of computer that can proactively interpret and learn from data, solve unfamiliar problems using what it has learned, and operate with the energy and efficiency of the human brain." The President's Council of Advisers on Science and Technology says in a [letter report](#) that "this effort is off to a commendable start." Establishing Grand Challenges is an effective means for focusing and amplifying the impact of Federal nanotechnology activities. The Nanoscale Science, Engineering, and Technology Subcommittee and the Office of Science and Technology Policy should identify a list of candidate nanotechnology Grand Challenges that address significant societal needs. At least one Grand Challenge should contain program elements aimed at manufacturing challenges specific to that focus area.

RESEARCH ENTERPRISE RECOMMENDATIONS: Recommendation 10: Recognizing growing international funding competition that is attracting US-based talent to go abroad, NNI agencies should substantially support the best single investigators to pursue creative, high-risk research. In particular, the National Science Foundation, Department of Energy, Department of Defense, and National Institutes of Health should coordinate to ensure that at least five new National Security Science and Engineering Faculty Fellowship (NSSEFF)-style senior-investigator grants in

nanoscience and nanotechnology are funded per year. Recommendation 11: The National Science Foundation, National Institutes of Health, Department of Energy, Department of Defense, and the National Institute of Standards and Technology should strongly support nanoscale research centers and infrastructure networks to ensure the effective training of a new generation of transdisciplinary scientists and engineers, in particular by strongly supporting the Next-Generation National Nanotechnology Infrastructure Network. ENVIRONMEN. More information is posted on https://www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/pcast_2017_nni_review_final.pdf

NSF Announces New Proposal & Awards Policies & Procedures Guide (PAPPG): The new NSF PAPPG provides the policies and procedures for all proposals to be submitted on or after January 30, 2017. The *Proposal & Award Policies & Procedures Guide* (PAPPG) is comprised of documents relating to the Foundation's proposal and award process for the assistance programs of NSF. The PAPPG, in conjunction with NSF's Grant General Conditions, serves as the Foundation's implementation of 2 CFR § 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*. If the PAPPG and NSF Grant Conditions are silent on a specific area covered by 2 CFR § 200, the requirements specified in 2 CFR § 200 must be followed.

Significant Changes to the PAPPG Part I:

- **Chapter I.D.1, Letters of Intent (LOI)**, includes additional language regarding the submission of a LOI for collaborative proposals. Proposers that plan to submit a collaborative proposal from multiple organizations should submit a single LOI for the entire project, given that NSF considers a collaborative proposal to be a unified research project.
- **Chapter II.B, Format of the Proposal**, has been updated to include two new types of proposals, RAISE and GOALI. These two types of proposals are described in greater detail in Chapter II.E. An additional resource has also been added to this section with information on NSF auto-compliance checks that are conducted during the proposal preparation and submission process.
- **Chapter II.C.1.e, Collaborators & Other Affiliations Information**, includes additional instructions for proposers. Each section of the Collaborators & Other Affiliations Information should be listed alphabetically by last name. The text has also been revised to remove the requirement that proposers list postgraduate scholar sponsors in this section of the proposal. Postgraduate scholar sponsor is not a disqualifying relationship for a reviewer, therefore, it was determined that this information is not necessary.
- **Chapter II.C.2, Sections of the Proposal**, has been revised to inform proposers that proposal preparation for RAPID, EAGER, RAISE, GOALI, Ideas Lab, FASED, Conference, Equipment, Travel, Center, Research Infrastructure and Fellowship projects may deviate from the content requirements of a full research proposal.
- **Chapter II.C.2.a, Cover Sheet**, has been updated to provide instructions that more closely follow the proposal preparation screens in FastLane.
- **Chapter II.C.2.d(iii), Results from Prior NSF Support**, includes revised language to clarify NSF's purpose for collecting this information in the Project Description. The purpose of the Results from Prior NSF Support section is to assist reviewers in assessing the quality of prior work conducted with current or prior NSF support. Additional instructions have also been added regarding the type of information that should be included for projects that have been recently awarded, where no new results exist.
- **Chapter II.C.2.g(vi), Other Direct Costs**, has been updated to include information on incentive payments, for example, payments to human subjects or incentives to promote completion of a survey. These costs should be included on line G6 of the NSF Budget and should be proposed in accordance with organizational policies and procedures. Indirect

costs should be calculated on incentive payments in accordance with the organization's approved US Federally negotiated indirect cost rate(s).

- **Chapter II.C.2.g(x), Fees (Line K on the Proposal Budget)**, has been added to provide instructions for use of the Fee line on the NSF budget, which is available for use only by the SBIR/STTR programs.
- **Chapter II.C.2.j, Special Information and Supplementary Documentation**, has been updated to include language that informs submitters of the type of information that may be requested by NSF in order to comply with Federal environmental statutes, including, but not limited to, the National Environmental Policy Act, the National Historic Preservation Act. And the Endangered Species Act.
- **Chapter II.D, Special Processing Instructions**, has been revised to address areas where special proposal processing may be required. Information on RAPID, EAGER, Ideas Lab, FASED, Equipment, Conference, and Travel Proposals has been moved to Chapter II.E.
- **Chapter II.D.5, Proposals Involving Human Subjects**, has been updated to reflect the Foundation's implementation of 45 CFR 690.118, applications and proposals lacking definite plans for involvement of human subjects. A hypertext link is provided to an NSF-approved format that may be used to submit such determinations by proposing institutions. Clarification has also been added regarding the IRB documentation that NSF must have in order to make an award when proposals involve human subjects.
- **Chapter II.E, Types of Proposals**, has been added to describe, in one place, the various other types of proposals that can be submitted to NSF, including the two new types, RAISE and GOALI. This section includes proposal preparation instructions for each of the types of proposal that may supplement or deviate from the guidance provided elsewhere in Chapter II.
- **Chapter II.E.9, Travel Proposal**, has been updated from "International Travel Proposals" to "Travel Proposal" to reflect that this type of proposal can be used for both domestic and international travel requests. Additional proposal preparation instructions have also been added to inform proposers of the required proposal elements, including the requirement that the Project Description contain Results from Prior NSF Support.

Webinar and Events

Event: NSF Webinar: Security Challenges in the Landscape of Emerging Digital Financial Services

When: January 19, 2017; 12.00 PM – 1.00 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=190771&org=NSF

Brief Description: Abstract: The developed world takes for granted the nearly universal deployment of cashless payment systems. From credit cards and online banking to massive scale business- to-business transactions, our modern economy is reliant on the regular and instantaneous movement of funds. Widespread access to this financial infrastructure is directly responsible for increased opportunity and prosperity. Unfortunately, only a small fraction of the developing world's population has access to these systems.

Emerging digital financial services can bridge this gap. Such services enable financial inclusion through the nearly ubiquitous deployment of cellular networks and mobile devices around the world. Customers not only deposit their physical currency through a range of independent vendors, but can also perform direct peer-to-peer payments and convert credits from such transactions back into cash. An increasing number of these services now also offer credit to previously unserved populations. Over the past decade, these systems have helped to

raise the standard of living and have revolutionized the way in which money is used in developing economies.

Unfortunately, our recently published analysis (Mo(bile) Money, Mo(bile) Problems: Analysis of Branchless Banking Applications in the Developing World, USENIX Security 2015) indicates that the information security practices in this space significantly lag behind those of traditional financial institutions. We have spent the past year working with policy makers, NGOs, academics, industry groups and individual companies; unfortunately, for all of the attention we have brought to the challenges facing this space, little has changed. As such, many of the world's most financially vulnerable citizens remain at great risk of significant financial loss. This talk focuses on the technical and policy challenges we have encountered during our work, and discusses a number of possible ways forward.

Biographical Sketch: Patrick Traynor is the John and Mary Lou Dasburg Preeminent Chair in Engineering and an Associate Professor in the Department of Computer and Information Science and Engineering (CISE) at the University of Florida. His research focuses on the security of mobile systems, with a concentration on telecommunications infrastructure and mobile devices. His research has uncovered critical vulnerabilities in cellular networks, made the first characterization of mobile malware in provider networks and offers a robust approach to detecting and combatting Caller-ID scams. He is also interested in Internet security and the systems challenges of applied cryptography. He received a CAREER Award from the National Science Foundation in 2010, was named a Sloan Fellow in 2014 and a Fellow of the Center for Financial Inclusion at Accion in 2016. Professor Traynor earned his Ph.D and M.S. in Computer Science and Engineering from the Pennsylvania State University in 2008 and 2004, respectively, and my B.S. in Computer Science from the University of Richmond in 2002. After promotion and tenure in the School of Computer Science at Georgia Tech, he joined the University of Florida in 2014 as part of the UFRising Preeminence Hiring Program. He is the co-director of the Florida Institute for Cybersecurity (FICS) and also a co-founder of CryptoDrop and Pindrop Security.

To Join the Webinar, register at: <http://www.tvworldwide.com/events/nsf/170119/>

Event: NSF Webinar: Updates to the NSF Proposal & Award Policies & Procedures Guide (PAPPG)

When: January 19, 2016 1.00 PM – 2.30 PM

Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=190643&org=NSF

Brief Description: The webinar will provide an overview of significant changes and clarifications to the PAPPG that will take effect for proposals submitted, or due, on or after January 30, 2017. The PAPPG details NSF's proposal preparation and submission guidelines, and provides guidance on managing and monitoring the award and administration of grants and cooperative agreements made by the Foundation. There is no cost to participate. To register yourself, and/or others for this webinar, please proceed to the [webinar registration site](#)

Grant Opportunities

National Science Foundation

Grant Program: STEM + Computing Partnerships (STEM+C)

Agency: National Science Foundation NSF 17-535

RFP Website: <https://www.nsf.gov/pubs/2017/nsf17535/nsf17535.htm>

Brief Description: As computing has become an integral part of the practice of modern science, technology, engineering and mathematics (STEM), the STEM + Computing Partnerships program

seeks to address the urgent need to prepare students from the early grades through high school in the essential skills, competencies, and dispositions needed to succeed in a computationally-dependent world. Thus, STEM+C advances the integration of computational thinking and computing activities in early childhood education through high school (pre-K-12) to provide a strong and developmental foundation in computing and computational thinking through the integration of computing in STEM teaching and learning, and/or the applied integration of STEM content in pre-K-12 computer science education.

Awards: Standard Grants. Anticipated funding amount: \$49,895,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: March 29, 2017

Contacts:

- Arlene M. de Strulle, EHR/DRL, telephone: (703) 292-5117, email: adestrul@nsf.gov
- Michael Ford, EHR/DRL, telephone: (703) 292-5153, email: miford@nsf.gov
- Amy Baylor, EHR/DRL, telephone: (703) 292-5126, email: abaylor@n

Grant Program: Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA)

Agency: National Science Foundation NSF 17-534

RFP Website: <https://www.nsf.gov/pubs/2017/nsf17534/nsf17534.htm>

Brief Description: The *BIGDATA* program seeks novel approaches in computer science, statistics, computational science, and mathematics, along with innovative applications in domain science, including social and behavioral sciences, education, biology, the physical sciences, and engineering that lead towards the further development of the interdisciplinary field of *data science*.

The solicitation invites two categories of proposals:

- *Foundations (F)*: those developing or studying fundamental theories, techniques, methodologies, and technologies of broad applicability to big data problems, motivated by specific data challenges and requirements; and
- *Innovative Applications (IA)*: those engaged in *translational* activities that employ new big data techniques, methodologies, and technologies to address and solve problems in specific application domains. Projects in this category must be collaborative, involving researchers from domain disciplines and one or more methodological disciplines, e.g., computer science, statistics, mathematics, simulation and modeling, etc.

Proposals in both categories must include a clear description of the big data aspect(s) that have motivated the proposed approach(es), for example: the scalability of methods with increasing data volumes, rates, heterogeneity; or data quality and data bias; etc. Innovative Applications proposals must provide clear examples of the impacts of the big data techniques, technologies and/or methodologies on (a) specific domain application(s).

Proposals in all areas of sciences and engineering covered by participating NSF directorates and partnering agencies [the Office of Financial Research (OFR)], are welcome.

Before preparing a proposal in response to this BIGDATA solicitation, applicants are strongly urged to review other related programs and solicitations and contact the respective NSF program officers listed in them should those solicitations be more appropriate. In particular:

- For the development of robust and shared data-centric cyberinfrastructure capabilities, applicants should consider the *Data Infrastructure Building Blocks (DIBBs)* program, https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504776;
- For computational and data science research not specifically addressing big data issues, applicants should consider the *Computational and Data Enabled Science and Engineering (CDS&E)* program, https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504813;

- For work that is focused more on scaling of software, rather than data-related issues, applicants should consider the *Scalable Parallelism in the Extreme (SPX)* program, https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505348;
- Proposals that are specific to the geosciences, and respond to the community needs and requirements expressed by the geosciences community, should consider the NSF EarthCube program for *Developing a Community-Driven Data and Knowledge Environment for the Geosciences*, <https://www.nsf.gov/geo/earthcube/>
- Proposals that focus on research in mathematics or statistics that is not tied to a specific big data problem should be submitted to the appropriate program within the MPS Division of Mathematical Sciences (DMS); see a list of DMS programs at <https://www.nsf.gov/funding/programs.jsp?org=DMS>; and
- Proposals that focus on research in the computer and information sciences not tied to a specific big data problem should be submitted to the appropriate CISE core program:
 - Computer and Network Systems (CNS) Core Programs: https://nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=12765&ods_key=nsf16579
 - Computing and Communication Foundations (CCF) Core Programs: https://nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=503220&ods_key=nsf16578 and
 - Information and Intelligent Systems (IIS) Core Programs: https://nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=13707&ods_key=nsf16581

Awards: Standard Grants. Anticipated funding amount: \$26,500,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: March 15, 2017 - March 22, 2017

Contacts:

- Chaitanya Baru, Senior Advisor for Data Science, CISE/OAD, telephone: (703) 292-4541, email: cbaru@nsf.gov
- Sylvia Spengler, Lead Program Director for BIGDATA, CISE/IIS, telephone: (703)292-8930, email: sspengle@nsf.gov
- Reed S. Beaman, Program Director, BIO/DBI, telephone: (703) 292-7163, email: rsbeaman@nsf.gov

National Institutes of Health

Grant Program: NIDA Core "Center of Excellence" Grant Program (P30)

Agency: National Institutes of Health PAR-17-121

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-17-121.html>

Brief Description: Core Center of Excellence Grants are intended to bring together investigators currently funded by NIH or other Federal or non-Federal sources to enhance the effectiveness of existing research and also extend the focus of research to drug abuse and addiction. A Core Center of Excellence should support innovation and be on the cutting edge of science. Incremental work should not be the focus of Center Activities. It is expected that research activities will cross a variety of disciplines to bring multiple perspectives and approaches to bear on significant problems. The Center should reflect thematic integration so that the Center does not support a collection of independent research projects. Multidisciplinary interactions in the Center are expected to have a synergistic effect that results in greater depth, breadth, quality of research and productivity beyond what is possible among individual research projects.

The applicant may propose pooling of existing core resources and request additional support for developing a shared research infrastructure. The research infrastructure support may include, for example, administrative coordination, subject recruitment, equipment, laboratories, statistical analysis, quality control, and database management. It should be made clear how this Center support would enhance a minimum of 3 separate federally funded research project grants at any time, with at least 2 distinct Program Directors/Principal Investigators PD(s)/PI(s) and result in programmatic coherence, synergy and integration. Applicants must demonstrate the potential for the continuation of funding of participating research project grants, and there must be at least two years of funding left for each grant identified at the time of submission. Funds may be requested for pilot research projects.

A NIDA P30 Core Center of Excellence grant must contain an administrative core and one or more research support cores, providing centralized resources and facilities for funded research projects that will be directed to new research in drug abuse and addiction. These may include, but are not limited to, genetics, proteomics, medication development, molecular, cellular, organ, system, developmental, behavioral, clinical, treatment, social, epidemiology, prevention, health services and AIDS. A Core Center must also contain a core to support pilot projects.

In addition, NIDA P30 research Centers are expected to serve as national research resources in the drug abuse research field. They are expected to attract established and promising investigators into drug abuse research, as well as for community outreach to enhance effective dissemination of research findings. In addition, the Center is also expected to provide research opportunities and experiences to new investigators.

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: September 26, 2017; September 26, 2018, September 26, 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.

Grant Program: Development of Socially-Assistive Robots (SARs) to Engage Persons with Alzheimer's Disease (AD) and AD-Related Dementias (ADRD), and their Caregivers (R43/R44)

Agency: National Institutes of Health PAR-17-108

Companion Opportunities: [PAR-17-107](#), [STTR R41/R42](#)- Phase I, Phase II, and Fast Track

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-17-108.html>

Brief Description: The purpose of this Funding Opportunity Announcement (FOA) is to encourage Small Business Innovation Research (SBIR) research and development of next-generation socially-assistive robots (SARs) to enhance health and well-being, reduce illness and disability, and improve quality of life for individuals with Alzheimer's disease (AD) and Alzheimer's-disease-related dementias (ADRD), and for caregivers of AD and ADRD patients.

This FOA targets the development of SARs that would function as companion robots providing psychosocial support (enhancing mood, mitigating the effects of loneliness, and enhancing social connection and communication), physiological interventions (e.g., stress reduction through the provision of biofeedback or other forms of behavioral therapy), and assistance with care management and activities of daily living. To achieve these ends, this FOA encourages a multi-disciplinary approach to foster collaborations between geriatricians (particularly those with

knowledge of cognitive impairment and dementia), psychologists, neurologists, computer scientists, and mechanical, electrical, and software engineering professionals.

NIA anticipates that the development of next-generation SARs would enable AD and ADRD patients and their caregivers to preserve and, to the extent possible, enhance their psychosocial and cognitive coping skills and resources. To these ends, NIA seeks research and development of SARs that would provide capabilities and resources to compensate for AD and ADRD-related challenges and deficits, including the capabilities to interpret and translate cognitive intent (to perform certain activities), make context-based decisions, and help AD/ADRD patients perform activities of daily living. Ultimately, NIA anticipates that these SARs would be capable of remote operation and assist in the delivery of healthcare and social support in settings otherwise lacking the caregiving infrastructure necessary to support AD and ADRD patients.

Specifically, this FOA encourages small businesses to conduct SBIR research and development that would:

- (1) develop artificial intelligence for SARs to assist families in caring for family members with AD and ADRD and to assist formal care providers helping such families;
- (2) design and validate autonomous robotic architecture for older adults with AD and ADRD and other forms of cognitive impairment or apathy;
- (3) assess the feasibility, acceptability and tolerance of the robot-mediated intervention;
- (4) design and develop robotics platforms that quickly adapt to changes in patients with AD and ADRD patients and to changes in caregivers;
- (5) develop intelligent assistive robots for patient care-management (e.g. dispensing medications, monitoring vital signs, and communicating with care givers);
- (6) enable and support AD and ADRD patients to live independently and safely in different environments (e.g., urban versus rural homes or in a assisted living facility);
- (7) use SARs to promote social interaction and engagement and reduce loneliness among AD and ADRD patients and caregivers;
- (8) develop SARs to motivate persons with AD and ADRD, and their caregivers, to be physically active;
- (9) assist care providers with awkward, unsafe, and physically stressful care tasks;
- (10) provide mobility assistance to AD and ADRD patients; and
- (11) develop SARs that are affordable and culturally acceptable in diverse populations.

Awards: Budgets up to \$350,000 total costs per year for Phase I and up to \$2,000,000 total costs per year for Phase II may be requested.

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

Deadline: [Standard dates](#) apply, by 5:00 PM local time of applicant organization.

*** Note new SBIR/STTR Standard Due 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.

Grant Program: Jointly Sponsored Ruth L. Kirschstein National Research Service Award Institutional Predoctoral Training Program in the Neurosciences (T32)

Agency: National Institutes of Health PAR-17-096

RFP Website: <https://grants.nih.gov/grants/guide/pa-files/PAR-17-096.html>

Brief Description: The purpose of the Jointly Sponsored Predoctoral Training Program in the Neurosciences (JSPTPN) is to provide strong, broad neuroscience training that will enable students to become successful research scientists at a time when the field is advancing at an astonishing pace. Neuroscience research increasingly requires investigators who can cross boundaries, draw on knowledge and approaches from various disciplines and levels of analysis,

and apply this breadth of knowledge in novel ways to yield new discoveries about the nervous system. Moreover, the ability to conduct impactful neuroscience research requires strong foundational skills in experimental design, statistical methodology and quantitative reasoning related to study design, analysis and interpretation.

Breakthroughs in neuroscience have come, and will continue to come, not only from a deep and broad understanding of the nervous system, but also from an understanding of biological systems not historically associated with neuroscience. For example, blood brain barrier function is now known to be heavily dependent on the multidrug resistance transporter, inflammatory responses are key components of many neurological disorders, and metabolic processes historically associated with biology or diseases outside the nervous system are now known to play a role in both normal brain function and neurobiological disorders. To achieve the goals of the JSPTPN, students should therefore be exposed to a broad spectrum of relevant science. In addition, the training supported by the JSPTPN must be grounded in principles of rigorous experimental design, an understanding of the critical need for, and proper use of, statistics, and quantitative literacy.

Broad-based research training. The JSPTPN supports a program of broad-based education and research experience during the first two years of graduate training. As such, training programs supported by a JSPTPN training grant must have a comprehensive, two-year training plan.

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: May 25, 2017; May 25, 2018; May 25, 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.

Department of Defense/US Army/DARPA/ONR

Grant Program: Diverse Collegiate Research and Development Collaboration Program

Agency: Department of Defense Air Force Research Lab FOA-AFRL-RQKP-2017-0001

Website: <http://open-grants.insidegov.com/l/47716/Diverse-Collegiate-Research-and-Development-Collaboration-Program-FOA-AFRL-RQKP-2017-0001>

Brief Description: The objective of the AFRL Diverse Collegiate R&D Collaboration program is to enable collaborative research partnerships between AFRL, Academia, and Industry, in areas including, but not limited to, high speed systems, turbine engines, aerospace vehicles, power and control. These technical areas are necessary for developing critical war-fighting technologies for the nation's air, space and cyberspace forces, as well as commercial derivatives.

Awards: Various; Estimated Funding Available: \$2,350,000

Full Proposal Deadline: Anytime until December 23, 2021

Contact Information: John D. McClellan Grants Officer Phone 937-713-9944

Department of Energy

Grant Program: Creating Innovative and Reliable Circuits Using Inventive Topologies and Semi Conductors (CIRCUITS)

**Agency: Department of Energy Advanced Research Projects Agency Energy
DE-FOA-0001727**

Website: <http://open-grants.insidegov.com/l/47898/Creating-Innovative-and-Reliable-Circuits-Using-Inventive-Topologies-and-Semi-Conductors-CIRCUITS-DE-FOA-0001727>

Brief Description: Areas of particular interest for the CIRCUITS program include novel circuit topologies, advanced control and drive electronics, and innovative packaging. These could catalyze the adoption of higher performance power converters in various critical applications (motor drives, automotive, power supplies, data centers, aerospace, ship propulsion, rail, distributed energy, and the grid) that offer significant direct and indirect energy savings and emissions reductions across electricity generation, transmission and distribution, and load-side consumption.

Most current power electronics utilize silicon power semiconductors that are slower, less energy efficient, and more constrained in operating temperatures than devices fabricated from WBG semiconductors, such as SiC and GaN, due to fundamental differences in material properties. To obtain a copy of the Funding Opportunity Announcement (FOA) please go to the ARPA-E website at <https://arpa-e-foa.energy.gov>. ARPA-E will not review or consider concept papers submitted through other means. For detailed guidance on using ARPA-E eXCHANGE, please refer to the ARPA-E eXCHANGE User Guide (<https://arpa-e-foa.energy.gov/Manuals.aspx>).

Awards: Advanced Research Projects Agency Energy is awarding 12 cooperative agreements with an estimated funding amount of \$20,000,000 total for Creating Innovative and Reliable Circuits Using Inventive Topologies and Semi Conductors (CIRCUITS).

Concept Papers Deadline: Applications for this cooperative agreement are due February 20, 2017. ARPA-E strongly recommends submitting Concept Papers 48 Hours in advance of the due date.

Contact Information: ARPA-E Contracting Officer ARPA-E-CO@HQ.DOE.GOV

NASA

Grant Program: ROSES 2016: Fellowships for Early Career Researchers

Agency: NASA NNH16ZDA001N-ECF

Website:

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={0A9B8DE3-6C85-899F-E114-D3819139508F}&path=init>

Brief Description: The Early Career Fellowship (ECF) program supports the development of individual research programs of outstanding scientists early in their careers and stimulates research careers in the areas supported by the Planetary Sciences Division. This Program is based on the idea that supporting key individuals is a critical mechanism for achieving high impact science that will lead the field forward with new concepts, technologies, and methods. This program consists of two components with two different submission procedures: the first is the one-page application to be an "Early Career Fellow" (ECF) and the second is the subsequent submission of a seven-page proposal for start up funds by a previously selected ECF. Section 2 presents details on the former, the application to be an ECF. Section 3 presents details on the latter, the proposal in response to this program element by selected ECFs to apply for up to \$100K in start up funds, once they obtain a permanent track position, which is defined in Section 4.3. See Section 3 for eligibility to apply for start up funds.

Awards: The application for start up funds is the second component of this program. The request for up to \$100K of start up funds for those who meet the eligibility requirements in Section 3.1

takes the form of a proposal submitted in response to this program element at any time during the open period for ROSES (i.e., there is no single fixed due date).

Letter of Intent: Not Required

Full Proposal Deadline: March 31, 2017

Contact: Doris Daou Planetary Science Division Science Mission Directorate NASA Headquarters Washington, DC 20546-0001 Telephone: (202) 358-1686 E-mail: Doris.Daou@nasa.gov

National Endowment of Humanities

Grant Program: Institutes for Advanced Topics in the Digital Humanities

Agency: National Endowment of Humanities

Website: <https://www.neh.gov/grants/odh/institutes-advanced-topics-in-the-digital-humanities>

Brief Description: The Institutes for Advanced Topics in the Digital Humanities program supports national or regional (multistate) training programs for scholars, humanities professionals, and advanced graduate students to broaden and extend their knowledge of digital humanities. Through this program NEH seeks to increase the number of humanities scholars and practitioners using digital technology in their research and to broadly disseminate knowledge about advanced technology tools and methodologies relevant to the humanities.

The projects may be a single opportunity or offered multiple times to different audiences. Institutes may be as short as a few days and held at multiple locations or as long as six weeks at a single site. For example, training opportunities could be offered before or after regularly occurring scholarly meetings, during the summer months, or during appropriate times of the academic year. The duration of a program should allow for full and thorough treatment of the topic. These professional development programs may focus on a particular computational method, such as network or spatial analysis. They may also target the needs of a particular humanities discipline or audience. Today, digital resources and other complex data—their form, manipulation, and interpretation—are as important to humanities study as more traditional research materials. Datasets, for example, may represent digitized historical records, high-quality image data, or even multimedia collections, all of which are increasing in number due to the availability and affordability of mass data storage devices and international initiatives to create digital content. Moreover, extensive networking capabilities, sophisticated analytical tools, and new collaboration platforms are simultaneously providing and improving interactive access to and analysis of these data as well as a multitude of other resources. The Institutes for Advanced Topics in the Digital Humanities program seeks to enable humanities scholars in the United States to incorporate advances like these into their scholarship and teaching.

Awards: Awards normally range from one to three years and from \$50,000 to a maximum of \$250,000 in outright funds.

Proposal Deadline: March 14, 2017.

Contact: Contact the NEH Office of Digital Humanities via e-mail at odh@neh.gov. Applicants wishing to speak to a staff member by telephone should provide in an e-mail message a telephone number and a preferred time to call.
