

NITRD  
NEWSFEDERAL AGENCY  
FUNDING  
OPPORTUNITIES

HPC

ROBOTICS /  
AUTONOMOUS  
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QUANTUM

CYBERSECURITY /  
PRIVACY5G, WIRELESS SPECTRUM,  
NETWORKING &  
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CLIMATE  
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WORKFORCE &  
ITSTEM / WORKFORCE  
RESOURCES &  
OPPORTUNITIES

## NITRD News Brief

We are pleased to continue NITRD's News Brief that offers insight into the activities NITRD's member agencies are conducting to achieve the Nation's priorities through the lens of the public-facing news sources. These are divided into networking and information technology topics that have been identified as of great importance for improving Americans' daily lives.

For ease of access, under NITRD's logo, the title of each section is listed as a link to that section. The titles of the articles under the section's heading are links that provide immediate access to the news article listed. We hope you find this informative and helpful in your daily activities.

Do you know someone who would like to receive NITRD's weekly news brief? They can email NITRD's IT aficionados at [nco@nitrd.gov](mailto:nco@nitrd.gov) and voilà they will receive the news brief with the cool technology articles each week!

## NITRD News

### **CAREER OPPORTUNITIES: Program Manager, National Strategic Computing Reserve Pilot Program Office**

...The Federal Government is creating a National Strategic Computing Reserve (NSCR) that can be called up in times of urgent national needs to address emergencies from pandemics to earthquakes to other natural or man-made disasters. The NSCR is envisioned as a coalition of resource providers (of compute, software, and data) and technical experts spanning government, academia, industry, nonprofits/foundations, civil society, and communities of practice supported by appropriate coordination structures and mechanisms that can be mobilized quickly to provide critical cyberinfrastructure capabilities and services in times of urgent need. The Networking and Information Technology Research and Development (NITRD) Program is seeking candidates interested in serving as the Program Manager for the NSCR Pilot Program Office. The NSCR Pilot Program

Office will (1) develop a plan, to include the structures, policies, and processes for an NSCR Program Office, and (2) prototype the implementation and operation of these structures, policies, and processes. Submit your resume by December 15, 2022.

The Networking and Information Technology Research and Development (NITRD) Program - Nov 11, 2022

### **NITRD and NAIIO SUPPLEMENT TO THE PRESIDENT'S FY2023 BUDGET**

...The Networking and Information Technology Research and Development (NITRD) Program is the Nation's primary source of federally funded R&D in advanced IT for computing, networking, and software. R&D is critical to the development of technologies that will launch the Nation into the next computing revolution and ensures that these advances support national priorities such as the Nation's economic competitiveness, security, well-being, response to climate change, and leadership in science and engineering. As such, the NITRD Program's impact on agency R&D collaboration has been crucial in providing agencies a platform to work together and with public and private entities by performing activities...

Networking and Information Technology Research and Development (NITRD) Program - Nov 29, 2022

### **FY2023 FEDERAL CYBERSECURITY R&D STRATEGIC PLAN IMPLEMENTATION ROADMAP**

...The Federal Cybersecurity Research and Development Strategic Plan Implementation Roadmap provides FY2023 implementation plans. This roadmap is provided per statutory requirement for public provision of this information pursuant to the Cybersecurity Enhancement Act of 2014. This document accompanies the NITRD Program and the National Artificial Intelligence Initiative Office Supplement to the President's FY2023 Budget.

Networking and Information Technology Research and Development (NITRD) Program - Nov 29, 2022

## **Federal Agency Funding Opportunities**

### **DHS S&T Announces New Remote Identity Validation Tech Demo Challenge**

...The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) announces the launch of the new Remote Identity Validation Technology Demonstration (RIVTD). Held in partnership with the Transportation Security Administration (TSA), Homeland Security Investigations Forensic Laboratory, and the National Institute of Standards and Technology (NIST), RIVTD is a series of technology challenges throughout 2023. Technology developers of remote identity validation capabilities are encouraged to participate in the RIVTD challenge. Applications are accepted starting in January 2023. Interested organizations may visit <https://www.dhs.gov/science-and-technology/remote-identity-validation-technology-demonstration> or contact [peoplescreening@hq.dhs.gov](mailto:peoplescreening@hq.dhs.gov) to register for the December 13 informational webinar.

Homeland Security - Dec 6, 2022

### **DOE: Integrative Computational Tools For Systems Biology Research**

...The DOE Office of Science (SC) program in Biological and Environmental Research (BER) hereby announces its interest in receiving applications to support research on the development of bioinformatics and computational applications within the Biological Systems Science Division's (BSSD) Genomic Science Program (GSP) (<http://genomicscience.energy.gov>) mission-space. For this FOA, BSSD solicits applications for the development of novel and innovative computational approaches or applications that have the potential to transform or advance systems biology research of plant and microbial systems relevant to DOE missions in energy security and resilience. The breadth of data types and the complexities inherent in the integration of different data layers present significant conceptual and implementation challenges. New algorithms for incorporating data derived from innovations in genomics, molecular imaging, structural biology, and spectroscopy are needed to work effectively with, and glean useful insights from, complex, integrated molecular, -omics' data. Computational simulation and rigorous hypothesis testing depend on the ability to incorporate multiple experimental/environmental conditions and associated meta-datasets. Submission Deadline for Pre-Applications: January 10, 2023 at 5:00 PM ET A Pre-Application is required.

science.osti.gov - Dec 6, 2022

## **HPC**

### **Nuclear Physics Gets a Boost for High-Performance Computing**

...A project led by the U.S. Department of Energy's (DOE's) Thomas Jefferson National Accelerator Facility is one of three to split \$35 million in grants from the DOE via a partnership program of DOE's Scientific Discovery through Advanced Computing (SciDAC). Each of the projects receiving the grants are joint projects between DOE's Nuclear Physics (NP) and Advanced Scientific Computing Research (ASCR) programs via a partnership program of SciDAC. As supercomputers become ever-more powerful, scientists

need advanced tools to take full advantage of their capabilities. For example, the Oak Ridge Leadership Computing Facility (OLCF) at DOE's Oak Ridge National Lab now hosts the world's first public exascale supercomputer. Its Frontier supercomputer has achieved 1 exaFLOPS in capability by demonstrating it can perform one billion-billion calculations per second. The goal of the supercomputer calculations is to mimic how quarks and gluons experience the real world at their own teeny scale in a way that can be calculated by computers. To do that, the nuclear physicists use supercomputers to first generate a snapshot of the environment inside a proton where these particles live for the calculations. Then, they mathematically drop in some quarks and glue and use supercomputers to predict how they interact. Averaging over thousands of these snapshots gives physicists a way to emulate the particles' lives in the real world...  
Brookhaven Lab - Dec 6, 2022

## **Robotics / Autonomous Vehicles**

### **NASA's Perseverance Rover Gets the Dirt on Mars**

...NASA's Perseverance rover snagged two new samples from the Martian surface on Dec. 2 and 6. But unlike the 15 rock cores collected to date, these newest samples came from a pile of wind-blown sand and dust similar to but smaller than a dune. As with rock cores, these latest samples were collected using a drill on the end of the rover's robotic arm. But for the regolith samples, Perseverance used a drill bit that looks like a spike with small holes on one end to gather loose material. Engineers designed the special drill bit after extensive testing with simulated regolith developed by JPL. Called Mojave Mars Simulant, it's made of volcanic rock crushed into a variety of particle sizes, from fine dust to coarse pebbles, based on images of regolith and data collected by previous Mars missions. A key objective for Perseverance's mission on Mars is astrobiology, including the search for signs of ancient microbial life. The rover will characterize the planet's geology and past climate, pave the way for human exploration of the Red Planet, and be the first mission to collect and cache Martian rock and regolith (broken rock and dust)...  
National Aeronautics and Space Administration - Dec 7, 2022

### **DOD Adopting Commercial Technology to Control Unmanned Ground Vehicles**

...Substantial technical breakthroughs in unmanned ground vehicles have led to their use in high-risk missions, such as reconnaissance, with the goal of reducing dangers for troops and increasing risks for adversaries. The Army partnered with the Defense Innovation Unit to prototype a software package, as well as a process to adapt uncrewed vehicle technology to unmanned ground vehicles. The Ground Vehicle Autonomous Pathways project will prototype software for the navigation of uncrewed vehicles by fusing data from multiple sensors and allowing teleoperations of unmanned ground vehicles. The project will also provide a technical pipeline to continue rapid development and deployment of autonomous features as they become commercially available...  
U.S. Department of Defense - Dec 6, 2022

### **NASA Conducts Acoustic Hover Test with Moog SureFly**

...Noise levels are a common concern when the public thinks about the anticipated addition of new aircraft, such as air taxis and delivery drones, into the urban airspace. NASA's Advanced Air Mobility mission is working with private sector developers of electric vertical take-off and landing (eVTOL) aircraft to study the levels of noise they make. Moog SureFly is one of those partners. The work is supported by the Revolutionary Vertical Lift Technology (RVLT) project of NASA's Advanced Air Vehicles Program. RVLT supports the Advanced Air Mobility mission's vision to enable a safe, accessible, and affordable new air transportation system alongside industry partners, community partners, and the Federal Aviation Administration...  
National Aeronautics and Space Administration - Dec 6, 2022

### **AFOSR-funded researchers use ultrasound waves to move objects hands-free opening possibilities for robotics**

...University of Minnesota researchers have discovered a new method to move objects using ultrasound waves. The research opens the door for using contactless manipulation in industries such as manufacturing and robotics, where devices wouldn't need a built-in power source in order to move. The research team has developed a method that can move larger objects using the principles of metamaterial physics. Metamaterials are materials that are artificially engineered to interact with waves, like light and sound. By placing a metamaterial pattern on the surface of an object, the researchers were able to use sound to steer it in a certain direction without physically touching it. Using this technique, the researchers can not only move an object forward but also pull it toward a source — not dissimilar from the tractor-beam technology in science fiction stories like Star Trek. This gives us a new mechanism to contactlessly operate things. ... This research was supported by the Air Force Office of Scientific Research.  
University of Minnesota Twin Cities - Dec 6, 2022

### **ONR-funded research shows octopus arms reveal an entirely new way of designing a nervous system**

...Octopuses have evolved complex nervous systems and are capable of a wide array of complicated behaviors. They provide a great opportunity to explore how alternative nervous system structures can serve the same basic functions of limb sensation and movement. Melina Hale and her colleagues have described something new and totally unexpected about the octopus nervous system: a structure by which the intramuscular nerve cords (INCs), which help the animal sense its arm movement, connect arms on the opposite sides of the animal. It provides inspiration for robotic engineering, such as new autonomous underwater devices. “Octopuses can be a biological inspiration for the design of autonomous undersea devices,” said Hale. “Think about their arms — they can bend anywhere, not just at joints. They can twist, extend their arms, and operate their suckers, all independently. The function of an octopus arm is a lot more sophisticated than ours, so understanding how octopuses integrate sensory motor information and movement control can support the development of new technologies.” This research was funded by US Office of Naval Research.  
UChicago News - Dec 5, 2022

## Quantum

### **Readout: National Quantum Initiative Centers Summit**

...On December 2, 2022, the White House Office of Science and Technology Policy (OSTP) hosted the thirteen National Quantum Initiative (NQI) and National Defense Authorization Act (NDAA) research centers to discuss the most pressing scientific and workforce challenges affecting quantum information science (QIS), as well as the impacts and benefits of the field for all of society. QIS and its enabling technologies remain a priority for the Biden-Harris administration, with the potential to profoundly impact our understanding of the physical world and provide economic and scientific benefits to humanity. ... Authorized by the NQI Act, the Department of Energy (DOE) and the National Science Foundation (NSF) each established five national research centers and institutes to accelerate breakthroughs in QIS, while the NDAA of Fiscal Year 2020 authorized the Department of Defense (DOD) and Intelligence Community (IC) to establish three QIS research centers to advance research, development, and deployment of QIS and QIS-enabled technologies.  
The White House - Dec 5, 2022

### **New Quantum Light Source Paves the Way to a Quantum Internet**

...Conventional light sources for fiber-optic telecommunications emit many photons at the same time. Photons are particles of light that move as waves. In today’s telecommunication networks, information is transmitted by modulating the properties of light waves traveling in optical fibers, similar to how radio waves are modulated in AM and FM channels. In quantum communication, however, information is encoded in the phase of a single photon—the photon’s position in the wave in which it travels. This makes it possible to connect quantum sensors in a network spanning great distances and to connect quantum computers together. The ability to integrate fiber-based quantum information technology into existing optical networks would be a significant step toward applications in quantum communication. To achieve this, quantum light sources must be able to emit single photons with controllable positioning and polarization and at 1.35 and 1.55 micrometer ranges where light travels at minimum loss in existing optical fiber networks, such as telecommunications networks....  
Department of Energy - Dec 2, 2022

### **DOE-funded MIT researchers use quantum computing to observe entanglement**

...For the first time, researchers at MIT, Caltech, Harvard University, and elsewhere sent quantum information across a quantum system in what could be understood as traversing a wormhole. A wormhole is a bridge between two remote spacetime regions. In the classical general theory of relativity, nothing is allowed to pass through the wormhole. Researchers sent a signal “through the wormhole” by teleporting a quantum state from one quantum system to another on the Sycamore 53-qubit quantum processor. To do so, the research team needed to determine entangled quantum systems that behaved with the properties predicted by quantum gravity — but that were also small enough to run on today’s quantum computers. To achieve this, the team used techniques from machine learning, taking highly interacting quantum systems and gradually reducing their connectivity. The output of this learning process produced many examples of systems with behavior consistent with quantum gravity, but each instance only required around 10 qubits — a perfect size for the Sycamore processor. The team then verified these and other properties with classical computer calculations. This new work opens up the possibility of future quantum gravity experiments with larger quantum computers and more complicated entangled systems. This work is supported by the Department of Energy...  
MIT News - Dec 1, 2022

## Cybersecurity / Privacy

### **Partnering With Ukraine on Cybersecurity Paid Off, Leaders Say**

...A year ago, a hunt forward 10-member team of the U.S. Cyber Command's Cyber National Mission Force arrived in Kyiv, Ukraine. That team grew from 10 to 39 people, working with Ukraine to strengthen its cyber defenses and provide reassurance. It paid off big-time as Russia launched its invasion. The Federal Bureau of Investigation, the Cybersecurity and Infrastructure Security Agency, industry, academia, as well as foreign allies and partners are among those that the Defense Department works with closely. The past year, the NSA released 24 unclassified cybersecurity advisories regarding what to expect in terms of Russian attacks on such things as the U.S. critical infrastructure. Over the last few decades, America's ability to secure against cyberattacks has improved pretty dramatically...

U.S. Department of Defense - Dec 3, 2022

### **AFRL connecting warfighters at the edge with RIPL - a cybersecurity tool**

...The Air Force Research Laboratory demonstrated its robust information provisioning layer, or RIPL, a cybersecurity tool that securely manages information across a network like ripples in the water. By combining advances in artificial intelligence and machine learning with advanced disruption tolerance protocols, RIPL overcame the limited and intermittent connectivity in contested environments during the demonstrations. This is key for rapidly delivering critical content to those in need, such as warfighters on the front lines. The demonstration showcased RIPL's ability for the multidomain dissemination of different types of information across different networks seamlessly and transparently...

Air Force Link - Dec 5, 2022

### **Engineering professors receive a National Center of Academic Excellence- Cybersecurity grant for the research and development of a platform for the cybersecurity workforce**

...Cybersecurity researchers at the University of North Texas have been awarded \$500K for the first two years and an estimated \$250K increment for the third year from the National Centers of Academic Excellence- Cybersecurity (NCAE-C) housed in the National Security Agency. The funding will support the research and development of a platform that uses natural language processing and artificial intelligence techniques to collect and compile cybersecurity-related data. This platform aims to help understand why there are 750,000 unfilled job openings in the cybersecurity field. By using the platform to collect and compile data related to cybersecurity and the intent of hiring managers for job postings. Hence the hiring managers can more easily connect with talented students and graduates. The platform also can be used to ensure college curriculum aligns with job postings to generate a workforce that can meet the needs of the job market, especially in cybersecurity...

UNT - Dec 2, 2022

### **NSF/NIH/DARPA fund a faster way to preserve privacy online**

...Searching the internet can reveal information a user would rather keep private. MIT researchers have now developed a scheme for private information retrieval that is about 30 times faster than other comparable methods. Their technique enables a user to search an online database without revealing their query to the server. Moreover, it is driven by a simple algorithm that would be easier to implement than the more complicated approaches from previous work. Their technique could enable private communication by preventing a messaging app from knowing what users are saying or who they are talking to. It could also be used to fetch relevant online ads without advertising servers learning a users' interests. This work is funded, in part, by the National Science Foundation, a NSF Graduate Research Fellowship, the National Institutes of Health, and the Defense Advanced Research Projects Agency.

MIT News - Dec 7, 2022

## **5G, Wireless Spectrum, Networking & Communications**

### **Office eases process for commercial internet access**

...An AFLCMC team has streamlined the Commercial Internet Service Provider approval process to allow all AFMC organizations on base faster access to faster internet service. Commercial WiFi is connectivity provided by a local vendor that is completely outside the base infrastructure and AFNET. Users connect back into the DoDIN or AFNet just like when teleworking from home, hotel, or kiosk by connecting back through the Internet to existing gateways and cyber defenses at DoD or AF gateways to do their jobs. The challenge from the onset was navigating the bureaucracy. It was always possible to gain commercial access, but requests typically took a year to process. Lt. Gen. Shaun Morris, AFLCMC commander, challenged the Commercial Internet Technology Office to innovate a better process than the existing one. The UX Team streamlined steps along with input from installation POC's across AFMC where AFLCMC personnel were assigned by redefining the review and approval process. Their new CISP ATO review process now produces results in days or weeks...

Air Force Materiel Command - Nov 30, 2022

### **Biden-Harris Administration Announces More Than \$73 Million in High-Speed Internet Grants for Tribal Lands**

...The Department of Commerce's National Telecommunications and Information Administration (NTIA) announced it has awarded nine grants as part of the Tribal Broadband Connectivity Program (TBCP). These new grants, totaling more than \$73 million, bring the total of the program to \$1.655 billion awarded to 121 Tribal entities. With funding from the Bipartisan Infrastructure Law, also known as the Infrastructure Investment and Jobs Act, these grants will expand high-speed Internet service network deployment and digital skills training to improve access to education, jobs, and healthcare on Tribal lands. The projects funded by these awards will directly connect 3,107 unserved Native American households that previously had no connectivity to high-speed Internet as well as businesses and anchor institutions. Additionally, the nine grants will create 49 new jobs. Additional grant awards will be announced on a rolling basis...  
National Telecommunications and Information Administration - Nov 30, 2022

## Microelectronics

### **Manufacturing USA Semiconductor Institutes; Extension of Comment Period: Dec 12th**

...The National Institute of Standards and Technology (NIST) is extending the period for submitting comments relating to potential Manufacturing USA semiconductor institutes until December 12, 2022. NIST requested information to inform the design of, and requirements for, potential Manufacturing USA institutes to strengthen the semiconductor and microelectronics innovation ecosystem, which could include design, fabrication, advanced test, assembly, and packaging capability. Responses to the RFI will inform NIST's development of funding opportunities for federal assistance to establish Manufacturing USA semiconductor institutes.  
Federal Register - Dec 1, 2022

### **DARPA-funded a new Stanford chip-scale laser isolator that could transform photonics**

...The light lasers emit can reflect back into the laser itself and destabilize or even disable it. At real-world scales, this challenge is solved by bulky devices that use magnetism to block the harmful reflections. At chip scale, however, where engineers hope lasers will one day transform computer circuitry, effective isolators have proved elusive. Researchers at Stanford University have created a simple and effective chip-scale isolator that can be laid down in a layer of semiconductor-based material hundreds of times thinner than a sheet of paper. The nanoscale isolator is "passive." It requires no external inputs, complicated electronics, or magnetics – technical challenges that have stymied progress in chip-scale lasers to date. These additional mechanisms lead to devices that are too bulky for integrated photonics applications and can cause electrical interference that compromises other components on the chips. Another advantage is that the new isolator is also made from common and well-known semiconductor-based material and can be manufactured using existing semiconductor processing technologies, potentially easing its path to mass production. This work was funded by DARPA.  
Stanford News - Dec 1, 2022

## Climate Change / Green Energy & IT

### **A Look to the Next Decade: Research to Assist the Nation and the World in Responding to Global Change**

...For over three decades, USGCRP has significantly improved our understanding of climate change, making important data and scientific information available and accessible to people across the U.S. and around the world. Community planners use climate projections—supported by agencies like NOAA, DOE, NSF, and NASA—to understand how climate change will impact their homes and infrastructure. As climate change causes a shift in seasons, farmers use observational data and indicators from USDA, NOAA, DOI, and EPA to decide which crops to plant and when to plant. And, as a result of research collaborations between agencies like NOAA and HHS, medical professionals use information about changing patterns of disease vectors to adequately diagnose and treat patients. The USGCRP is releasing its Strategic Plan for the next decade (2022–2031). The Plan builds on the enormous knowledge base that USGCRP and others have constructed, while enabling new approaches, critical research, and the provision of actionable knowledge to a diversity of decision makers. The Plan is organized around four pillars: 1) Advancing Science, 2) Engaging the Nation, 3) Informing Decisions, and 4) Collaborating Internationally...  
The White House - Dec 6, 2022

### **The Potential Role of ARPA-I in Accelerating the Net-Zero Game Changers Initiative**

...The Biden-Harris Administration is committed to supporting innovation in the transportation sector—based on cutting-edge science and technology—to make sure the United States is the leader in infrastructure. This includes innovations to build transportation infrastructure systems that are resilient to the impacts of climate change, integrate new and emerging modes of transportation, enhance safety and accessibility for all, and contribute to the Nation's goal of achieving net-zero greenhouse gas (GHG) emissions no later than 2050. The United States can help realize our infrastructure, transportation, and net-zero ambitions through the creation of the Advanced Research Projects Agency-Infrastructure, or ARPA-I, within the Department of Transportation. The Administration recently announced the Net-Zero Game Changers Initiative, to accelerate game-changing

climate innovations to meet President Biden's goal to reach net-zero greenhouse gas emissions by no later than 2050. To launch the initiative, the White House released a new report, U.S. Innovation to Meet 2050 Climate Goals. Some game changers — referred to as cross-cutting innovations — can eliminate emissions from multiple sources (e.g., a net-zero power grid and advanced biofuels). Other innovations address a particular end-use sector (e.g., net-zero steel and concrete). Due to the urgency of the climate crisis and the scale of the challenge, the United States must advance multiple technological pathways to net-zero...

The White House - Dec 7, 2022

### **Carbon dioxide removal as a tool to mitigate climate change**

...NOAA is releasing a new strategy and inviting the public to join upcoming listening sessions that will guide the agency's potential role in an important part of understanding and addressing climate change — carbon dioxide removal. The Biden-Harris Administration is committed to galvanizing global climate action to meet climate goals and build resilient communities, economies and ecosystems. To address the impacts of climate change, it is necessary to reduce the emission of greenhouse gasses, including carbon dioxide. There is also ongoing research into the potential for removing the carbon dioxide and NOAA has summarized some of the current science on this topic in a new report. The agency could use existing and innovative observations, models, ecosystem assessments and spatial planning tools to inform evidence-based decisions. Those decisions, in turn, could be used by many in the carbon removal sector, including state and local governments, private sector entities and non-profit organizations, as well as other federal agencies...

National Oceanic and Atmospheric Administration - Dec 1, 2022

### **NSF funds research that finally reveals why the Southern Hemisphere is stormier than the Northern**

...For centuries, sailors who had been all over the world knew where the most fearsome storms of all lay in wait: the Southern Hemisphere. Scientists poring over satellite data could finally put numbers behind sailors' intuition: The Southern Hemisphere is indeed stormier than the Northern, by about 24%, in fact. A new study led by University of Chicago climate scientist Tiffany Shaw lays out the first concrete explanation for this phenomenon. Shaw and her colleagues found two major culprits: ocean circulation and the large mountain ranges in the Northern Hemisphere. The study also found that this storminess asymmetry has increased since the beginning of the satellite era in the 1980s. The increase was shown to be qualitatively consistent with climate change forecasts from physics-based models. With the advent of satellite-based global observing in the 1980s, researchers could quantify that the Southern Hemisphere has a stronger jet stream and more intense weather events. Shaw's team used a numerical model of Earth's climate built on the laws of physics that reproduced the observations. Then they removed different variables one at a time, and quantified each one's impact on storminess. Looking over past decades of observations, they found that the storminess asymmetry has increased over the satellite era and the Southern Hemisphere storminess changes were connected to changes in the ocean. The scientists checked and found that models used to forecast climate change as part of the Intergovernmental Panel on Climate Change assessment report were showing the same signals—increasing storminess in the Southern Hemisphere and negligible changes in the Northern. ... Funding for this research was by the National Science Foundation.

UChicago News - Dec 5, 2022

### **NSF-funded researchers propose new structures to harvest untapped source of freshwater**

...An almost limitless supply of fresh water exists in the form of water vapor above Earth's oceans, yet remains untapped. A new study from the University of Illinois Urbana-Champaign is the first to suggest an investment in new infrastructure capable of harvesting oceanic water vapor as a solution to limited supplies of fresh water in various locations around the world. The researchers performed atmospheric and economic analyses of the placement of hypothetical offshore structures 210 meters in width and 100 meters in height. Through their analyses, the researchers concluded that capturing moisture over ocean surfaces is feasible for many water-stressed regions worldwide. One of the more robust projections of climate change is that dry regions will get drier, and wet areas will get wetter; this projection of increasingly arid conditions favors the new ocean vapor-harvesting technology. The National Science Foundation supported this research.

News Bureau - Dec 6, 2022

## **Digital Health**

### **OSTP, in Partnership with ONC, Seeks Input on Optimizing Data Capture for Clinical Trials - Health IT Buzz**

...The COVID-19 pandemic demonstrated the need for a coordinated clinical trials enterprise, one that can swiftly characterize emerging viral threats and evaluate the effectiveness of vaccines, therapeutics, and other countermeasures across a diversity of trial participants. In response, the Biden-Harris Administration released the National Biodefense Strategy, which calls for a U.S. clinical trials infrastructure "ready to administer candidate countermeasures to participants within 14 days after the identification of a viable countermeasure." In support of this effort, the White House Office of Science & Technology Policy (OSTP), in coordination with the National Security Council, issued a Request for Information (RFI) on October 26 seeking input from the public about how a coordinated clinical research system can be deployed in the event of an emerging

disease outbreak. On October 28, OSTP issued a second RFI related to the innovative clinical trials goal of the National Biodefense Strategy. This RFI was prepared in partnership with the Office of the National Coordinator for Health Information Technology (ONC).  
Health IT Buzz - Dec 6, 2022

### **Request for Information (RFI) on Data Collection for Emergency Clinical Trials and Interoperability Pilot; Extension of Comment Period**

...The Office of Science and Technology Policy (OSTP) invited comments on how to optimize data collection for clinical trials carried out across a range of institutions and sites, both in emergency settings and in the pre-emergency phase. OSTP and ONC are seeking input on viable technical strategies to distribute clinical trial protocols and capture clinical trial data using common application programming interfaces (APIs). OSTP and ONC also seek information about whether there is value in a pilot or demonstration project to operationalize data capture in the near term. OSTP has determined that an extension of the comment period until January 27, 2023 is appropriate...  
Federal Register - Nov 18, 2022

### **Request for Information; Clinical Research Infrastructure and Emergency Clinical Trials**

...The Office of Science and Technology Policy (OSTP) invited comments on improving the U.S. clinical trials infrastructure and in particular, our ability to carry out emergency clinical trials. OSTP, in partnership with the National Security Council (NSC), is leading efforts to ensure that coordinated and large-scale clinical trials can be efficiently carried out across a range of institutions and sites to address outbreaks of disease and other emergencies. In response to requests by prospective commenters that they would benefit from additional time to adequately consider and respond to the RFI, OSTP has determined that an extension of the comment period until January 27, 2023 is appropriate.  
Federal Register - Dec 6, 2022

### **HHS Office for Civil Rights Issues Bulletin on Requirements under HIPAA for Online Tracking Technologies to Protect the Privacy and Security of Health Information**

...The Office for Civil Rights (OCR) at the U.S. Department of Health and Human Services issued a bulletin to highlight the obligations of Health Insurance Portability and Accountability Act of 1996 (HIPAA) on covered entities and business associates (“regulated entities”) under the HIPAA Privacy, Security, and Breach Notification Rules (“HIPAA Rules”) when using online tracking technologies. These online tracking technologies, like Google Analytics or Meta Pixel, collect and analyze information about how internet users are interacting with a regulated entity’s website or mobile application. Some regulated entities regularly share electronic protected health information (ePHI) with online tracking technology vendors and some may be doing so in a manner that violates the HIPAA Rules. The bulletin addresses potential impermissible disclosures of ePHI by HIPAA regulated entities to online technology tracking vendors. The Bulletin explains what tracking technologies are, how they are used, and what steps regulated entities must take to protect ePHI when using tracking technologies to comply with the HIPAA Rules...  
The U.S. Department of Health and Human Services - Dec 1, 2022

### **HUNTRESS: A Step Forward for Computational Oncology Data Analysis**

...The latest developments in computational oncology are giving medical researchers a glimpse into a future where they’ll be able to understand tumor progression via supercomputers and advanced mathematical algorithms. Toward this end, scientists from Lawrence Berkeley National Laboratory recently participated in a collaborative research project with the National Cancer Institute in which they developed HUNTRESS (Histogrammed UNion Tree REconStruction Scheme), a computational method that determines the true progression history of a tumor with high probability...  
Berkeley Lab - Nov 30, 2022

### **NIH-Funded Penn Collaboratory on Healthy Aging to Award 12 Grantees \$2.1 Million**

...The Penn Artificial Intelligence and Technology Collaboratory for Healthy Aging (PennAITech) focuses on identifying, developing, evaluating, commercializing, and disseminating innovative technology and artificial intelligence methods/software to support aging. It is made possible through a grant from the National Institute on Aging, a part of the National Institutes of Health. The Collaboratory Pilot Core invites applications for pilot studies using technology and artificial intelligence (AI) to optimize care management and health outcomes for older Americans, including those with Alzheimer’s Disease and Related Dementias (ADRD) living in their homes independently, and those receiving clinical care or skilled home and community-based services. ... The awardees represented the broad range of innovative solutions that have the potential to significantly improve the lives of older adults and their families, and our team of experts at Penn are looking forward to working with them and supporting them in this journey...  
The University of Pennsylvania Almanac - Dec 6, 2022

## **Other IT Related**



### **FACT SHEET: U.S.-EU Trade and Technology Council Advances Concrete Action on Transatlantic Cooperation**

...The U.S.-EU Trade and Technology Council (TTC) held its third ministerial meeting on December 5 at the University of Maryland in College Park. Secretary of State Antony J. Blinken, Secretary of Commerce Gina Raimondo, and United States Trade Representative Katherine Tai co-chaired the meeting with European Commission Executive Vice Presidents Margrethe Vestager and Valdis Dombrovskis to discuss progress and advance concrete action on transatlantic cooperation that demonstrate our approach to trade, technology, and innovation in line with democratic principles and universal human rights. The United States and the European Union launched a number of new, concrete initiatives that will deepen our cooperation bilaterally and in partnership with third countries, including: \* Supporting Secure and Resilient Digital Connectivity in Third Countries \* Cooperating on New and Emerging Technologies \*Building Resilient Semiconductor Supply Chains...  
The White House - Dec 5, 2022

### **What is “Indigenous Knowledge” And Why Does It Matter? Integrating Ancestral Wisdom and Approaches into Federal Decision-Making**

...The White House Office of Science and Technology Policy (OSTP) and Council on Environmental Quality (CEQ) released the first-ever Guidance for Federal Departments and Agencies on Indigenous Knowledge at the White House Tribal Nations Summit. The guidance, and accompanying implementation memorandum, recognized that in order to make the best scientific and policy decisions possible, the Federal government should value and, as appropriate, respectfully include Indigenous Knowledge. Complementing the above activities, last November, the Biden-Harris Administration released a historic Memorandum recognizing Indigenous Knowledge as a critical contributor to the scientific, technical, social, and economic advancements of the United States and to our collective understanding of the natural world. The Memorandum committed the Administration to craft White House Guidance on Indigenous Knowledge for Federal agencies. One year later, the release of this Guidance is an important next step...  
The White House - Dec 2, 2022

### **Secretary of Defense Establishes Office of Strategic Capital**

...Secretary of Defense Lloyd J. Austin III today established the Office of Strategic Capital (OSC), a Department of Defense organization that will help build an enduring technological advantage by partnering with private capital providers. OSC will connect companies developing critical technologies vital to national security with capital. Critical technologies such as advanced materials, next-generation biotechnology, and quantum science often require long-term financing to bridge the gap between the laboratory and full-scale production, often referred to as the "Valley of Death" in industry. While existing offices rely on grants and contracts to deploy capital, OSC is investigating the use of non-acquisition-based tools, such as loans and loan guarantees. Many other federal agencies use credit programs to participate in capital markets through loans, loan guarantees, development funds, and other tools. These types of federal investments have been vital in helping companies such as Apple, Cray Research, and Sun Microsystems early in their development. The OSC is unique within DoD by seeking to use proven credit programs, making strategic public-private investments in supply chains, and supporting critical technology companies from early-stage to full production...  
U.S. Department of Defense - Dec 1, 2022

### **How human presence at South Pole has evolved over the past century**

...The geographic South Pole sits more than 800 miles from the nearest coastline of Antarctica. It's currently home to some of the U.S. National Science Foundation's most sophisticated research facilities, with two telescopes to study the cosmos and the world's largest neutrino detector. For Antarctica Day, which recognizes the anniversary of the signing of the Antarctic Treaty in 1959, here's a look at the history of human infrastructure at the South Pole and how the human presence there has grown since explorers first reached the Pole in 1911...  
National Science Foundation - Dec 1, 2022

### **Department of the Air Force announces Spark Tank 2023 semifinalists**

...The sixth annual Spark Tank 2023, or ST23, quarterfinals were held Nov. 9, at the Basic Research Innovation and Collaboration Center in Arlington, with the top 15 ideas selected to advance to semifinals. The Spark Tank competition identifies, supports and celebrates high-performing Department of the Air Force innovators who submit and rally around ideas through the Guardians and Airmen Innovation Network, or GAIN, a force-wide crowdsourcing platform. The venture capital style pitch to investment Spark Tank competition is co-sponsored and organized by the Office of the Deputy Under Secretary of the Air Force, Management, or SAF/MG, and AFWERX. New this year, and in support of the DAF's digital transformation culture shift initiative, ST23 launched with a goal of 100% digital execution. The program accomplished this by leveraging GAIN's smart technology operating platform to streamline campaign communications between coordinators, moderators and intrapreneurs. Then, to ensure the fastest and most asynchronous coordination, the campaign management team created a Microsoft Teams collaboration forum for internal communications. The finals will be held during the 2023 Air and Space Forces Association's Warfare Symposium, March 8, 2023, in Aurora, Colorado...  
Air Force Link - Nov 30, 2022

### **Hip-hopping into a career in computer science**

...When high school students think about producing hip-hop tracks, many of them also understand the importance of learning to code. That's because more than 1 million people in over 5,000 schools spanning all 50 U.S. States and 180 countries are using EarSketch. The NSF-seeded, web-based audio composition environment lets students make music with JavaScript or Python code. The EarSketch project investigates the hypothesis that adding a creative component to a computer science learning environment will improve students' computer science learning and attitudes toward computing. The EarSketch team is seeing positive outlooks in each of these categories among students of color and women who are underserved in the computational workforce. A single NSF award began funding EarSketch in 2011. Over the past decade, the program has received more than 10 NSF awards and has grown to serve more than 1 million users in over 5,000 schools across all 50 U.S. states and 180 countries...

National Science Foundation - Dec 6, 2022

### **Two Division Newport employees win Black Engineer of the Year STEM awards**

...Naval Undersea Warfare Center Division Newport engineers Abner Barros and Calvin Roldan recently won Career Communications Group (CCG) Black Engineer of the Year Award (BEYA) STEM Outstanding Achievement Awards for 2023. Barros, a resident of Fall River, Massachusetts, won in the Science Spectrum Trailblazer category, which honors minority men and women who are actively creating new paths for others in science, research, technology and development. Roldan, a resident of New Bedford, Massachusetts, won in the Modern-Day Technology Leader category, which recognizes a commitment to shaping the future of science, technology, engineering and math (STEM) fields...

Navy.mil - Dec 5, 2022

### **Montana State students deliver computer for NASA moon mission**

...When two Montana State University students recently took a flight to Austin, Texas, they had arguably the most unique cargo of all the passengers: a Rubik's Cube-sized computer that's scheduled to land on the moon. Chris Major and Jake Davis, graduate students in MSU's Norm Asbjornson College of Engineering who have spent years helping to develop the specialized computer called RadPC, delivered the completed prototype on Oct. 19 to Firefly Aerospace's facility where the lunar lander is being readied for the 2024 NASA mission. The trip was the latest chapter in the decade-long development of RadPC, which was conceived by MSU researcher Brock LaMeres as a new way of coping with radiation in outer space that can disrupt the computers that control satellites and spacecraft. The onboard computers that control spacecraft are traditionally made with oversized circuitry fashioned from special materials to withstand the high-energy radiation emitted by the sun and other celestial bodies, but that means the devices are more costly and cumbersome, LaMeres explained. In contrast, RadPC uses ordinary computer processors with complex MSU-developed software to create on-the-fly redundancy, allowing computations to continue even if a radiation particle strikes and disrupts the computer's sensitive memory...

Montana State University - Dec 1, 2022

### **UToledo Cyber Security Club Performs Well in National CyberForce Competition**

...The University of Toledo Club for Cyber Security recently ranked 33rd out of 144 teams in the CyberForce Competition 2022 organized by the Department of Energy (DOE) Argonne National Lab in Chicago. The six members of the UToledo team — five from the master's programs in cyber security — ranked first in the Service Scan Category, which ensures that various services such as a web server, an email server or a file server are running correctly. Through the CyberForce Competition, the DOE has worked to increase hands-on cyber education to college students and professionals, awareness into the critical infrastructure and cyber security nexus and basic understanding of cyber security within a real-world scenario. Utilizing critical infrastructure-focused scenarios, the DOE's competition added realistic components that include a cyber-physical infrastructure, lifelike anomalies and constraints and actual users of the systems. This competition provides students a hands-on security approach to their infrastructure from their servers and virtual machines to the physical devices on their tables. And includes the strain of balancing security with usability; scores of participants include a user's ability to continue normal work operations...

THE UNIVERSITY OF TOLEDO - Dec 6, 2022

## **STEM / Workforce Resources & Opportunities**

### **R&D WORKFORCE TRAINING: FEDERAL AGENCIES' STEM INTERNSHIPS, SCHOLARSHIPS, AND TRAINING OPPORTUNITIES**

...Increasing the availability of STEM opportunities is a priority in the Biden-Harris Administration. To help facilitate this, the team at NITRD developed a STEM Portal that allows anyone to search for internships and other training opportunities at Federal agencies. The NITRD STEM PORTAL is a searchable database that includes a description, link, and contact information for each program listing. Government-sponsored internships and training programs are competitive, but there are many Federal opportunities and the NITRD STEM Portal is here to help...

### **AI Researchers Portal**

...Our Nation's AI innovation begins with the inspirational ideas of researchers from all across the country. To make it easier for researchers to locate and explore the many Federal resources and funding programs available to support and investigate novel ideas in AI, the National AI Initiative Office, in partnership with Federal departments and agencies and the Networking and Information Technology Research and Development coordination office, established an AI Researchers Portal. This portal connects AI researchers to Federal resources that can support their research, including data, computing, and testbeds, as well as AI-relevant grant funding programs. It also provides searchable repositories of approximately 140 current Federal grant programs relevant to AI, and around 40 Federally-funded testbed resources, in addition to a wide variety of data and computing resources useful for AI research...

National Artificial Intelligence Initiative - Dec 8, 2022

### **NIST: NRC Postdoctoral Research Associateships Program**

...The NIST NRC Postdoctoral Program supports a nationwide competitive postdoctoral program administered in cooperation with the National Academies/National Research Council (NRC). The postdoctoral program brings research scientists and engineers of unusual promise and ability to perform advanced research related to the NIST mission, introduces the latest university research results and techniques to NIST scientific programs, strengthens mutual communication with university researchers, shares NIST unique research facilities with the U.S. scientific and engineering communities, and provides a valuable mechanism for the transfer of research results from NIST to the scientific and engineering communities.

National Institute of Standards and Technology - Dec 8, 2022

### **AFRL accepting applications for fully funded graduate internship program: Deadline Jan 20 2023**

...The Air Force Research Laboratory, or AFRL, is accepting applications now through Jan. 20, 2023, for a fully funded, world-class graduate student internship program here. Applicants must U.S. citizens who are currently enrolled full-time in a graduate-level Master of Science or Ph.D. program at an accredited U.S.-based institution. Selected candidates will be placed in AFRL's Materials and Manufacturing Directorate and the 711th Human Performance Wing to gain hands-on experience conducting state-of-the-art research and prototype development with world-class mentors and senior scientists. In addition to collaborating with experts in specialty fields, internship awardees receive a housing allowance of up to \$2,000 per month for off-base accommodations and a monthly stipend of \$3,600 to cover meals, transportation and incidentals. Interns have the option to complete the internship during the summer immediately following graduation; however, they can complete the program within any consecutive three-month period within one year. All internships must be completed on or before Apr. 1, 2024...

Air Force Materiel Command - Dec 2, 2022

### **NIST: Summer Undergraduate Research Fellowship (SURF)**

...SURF is an 11-week summer fellowship program focused on undergraduate students interested in pursuing graduate degrees in science and engineering, or related areas. The program exposes students to cutting-edge research and promotes the pursuit of graduate degrees in STEM. The SURF Program is designed to inspire undergraduate students to pursue careers in STEM (science, technology, engineering, and mathematics) through a unique research experience that supports the NIST mission. Since 1993, SURF students from across the country have had the opportunity to gain valuable, hands-on experience, working with cutting edge technology in one of the world's leading research organizations and home to three Nobel Prize winners. Over the course of 11 weeks, SURF students contribute to the ongoing research of one of the six NIST facilities which are the Communications Technology Laboratory (CTL), Engineering Laboratory (EL), Information Technology Laboratory (ITL), Material Measurement Laboratory (MML), NIST Center for Neutron Research (NCNR), and Physical Measurement Laboratory (PML) (which now includes project in the Center for Nanoscale Science and Technology). The SURF Program is administered at the Boulder, CO and Gaithersburg, MD locations. Applications are required to be submitted through USAJOBS.

National Institute of Standards and Technology - Nov 9, 2022

### **NIST: Summer High School Intern Program**

...The Summer High School Intern Program (SHIP) is a NIST-wide summer intern program for students who will have finished their junior or senior year of high school by the start of the program and are interested in scientific research. Students selected for this competitive volunteer program will participate in cutting-edge research at NIST, and will work closely with NIST staff scientists and engineers on a specific research problem. The on-line application, including letters of recommendation, is accepting applications only between December 01 and February 13, 2023.

National Institute of Standards and Technology - Dec 8, 2022

## **Innovation Through NITRD Coordination**

Networking and Information Technology Research and Development -National Coordination Office, Washington, DC USA

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