



NITRD News Brief

The NITRD News Brief is now distributed biweekly. We look forward to sharing a new innovative newsletter format with you soon. If you have any questions, please email us at nco@nitrd.gov.

NITRD's News Brief 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 news brief? They can email nco@nitrd.gov to receive the news brief.

NITRD News

Request for Information on the National Spectrum Research and Development Plan

...The National Spectrum Strategy (Strategy), November 13, 2023, Strategic Objective 3.2 directs the U.S. Government, through the White House Office of Science and Technology Policy and in coordination with the Federal agencies, to develop a National Spectrum Research and Development Plan (R&D Plan). The R&D Plan will act as an organizing national document, providing guidance for government investments in spectrum-related research and offering valuable insights. The plan will identify key innovation areas for spectrum research and development and will include a process to refine and enhance these areas on an ongoing basis. OSTP has tasked the NITRD Wireless Spectrum Research and Development Interagency Working Group (WSRD IWG) to draft and coordinate development of the National Spectrum R&D Plan. The NITRD WSRD

IWG requests input from the public, including academia and industry, to assist in development of the National Spectrum R&D Plan. Interested persons are invited to submit comments on or before 11:59 p.m. (ET) on March 21, 2024...
NITRD - Feb 21, 2024

Black History Month

FACT SHEET: The Biden-Harris Administration Advances Equity and Opportunity for Black Americans and Communities Across the Country

...President Biden and Vice President Harris have leveraged the full force of the Federal Government to advance racial justice and equity and ensure the promise of America for all communities, including Black Americans, across the country. From promoting entrepreneurship to increasing access to homeownership and delivering the lowest Black unemployment rate, from proving it's possible to reduce child poverty to historic lows to expanding access to quality affordable healthcare, from advancing voting rights and police accountability to ensuring equal access to a high-quality education with historic funding for Historically Black Colleges and Universities (HBCUs), President Biden and Vice President Harris are committed to investing in the future of Black communities...
The White House - Feb 6, 2024

Pete Miller's Journey as a Black Nuclear Engineer

...Small modular reactors are all the rage these days, with several promising designs working toward potential deployment early next decade. They have Pete Miller to partially thank for it. He's the one who championed funding for SMR research during his time as assistant secretary for nuclear energy and helped lay the groundwork for the technology to flourish more than a decade ago. Miller's career in nuclear took him places he never would have imagined as a kid growing up on the South Side of Chicago. From Northwestern University to Los Alamos National Laboratory to the halls of the U.S. Department of Energy, he forged his own path as a Black man in a nuclear engineering...
Department of Energy - Feb 27, 2024

Celebrating Black History Month: A Q+A With Dr. Jon Gant

...This Black History Month, NTIA celebrates the historic and present-day achievements of Black Americans who paved the way for innovation in telecommunications and tech sciences. We end the month with a spotlight on Dr. Jon Gant, Director of the Office of Minority Broadband Initiatives...
National Telecommunications and Information Administration - Feb 26, 2024

A celebration of Black History Month at Argonne

...In celebration of Black History Month, Argonne is shining a spotlight on a few of these contributors — and they are shining right back! These individuals, through their roles and responsibilities at Argonne, are pursuing, causing and directing outcomes at the laboratory. Their efforts are reaching their broader science and professional disciplines and beyond — to elevate us all. Sean Jones is Argonne's chief research officer and its senior science strategist and advisor. Before joining Argonne, Sean served as the assistant director for the National Science Foundation's (NSF) \$1.6 billion directorate for Mathematical and Physical Sciences, where he stewarded multidisciplinary science centers, user facilities and research programs in the domains of astronomy, physics, chemistry and materials science. ... Nadine Lacombe is Argonne's chief legal counsel works across legal disciplines and representing a range of private- and public-sector clients...
Argonne National Laboratory - Feb 14, 2024

Federal Agency Funding Opportunities

Biden-Harris Administration Announces \$24 Million to Expand America's Clean Energy Workforce and Enhance Manufacturing Efficiency

...The U.S. Department of Energy (DOE) announced a new \$24 million funding opportunity for workforce training programs with a focus on training in clean energy jobs that do not require a four-degree. This funding, from the Bipartisan Infrastructure Law, will further expand the existing Industrial Assessment Centers (IAC) network to include more union training programs, community colleges, and trade schools. These new IACs will comprise both new training programs as well as expanded and enhanced manufacturing assistance programs, all of which will work with employer partners to provide hands-on learning for participants alongside technical assistance to strengthen SMMs' operations. This solicitation will be managed by DOE's Partnership Intermediary, ENERGYWERX, who will help reach and support applicants who may have limited experience with DOE funding opportunities...
Department of Energy - Feb 23, 2024

HPC

Fair Play for Data: Researchers Develop Practical FAIR Principles for Data Sets

...The Higgs boson is a fundamental particle responsible for the generation of mass in all other elementary particles. Researchers have developed strategies to understand how the Higgs boson interacts with the other elementary particles. Researchers have defined practical FAIR (findable, accessible, interoperable, reusable) principles for data. FAIR will help humans and computers use large data sets. It will also enable modern computers to process these data sets. This work provides a guide that enables researchers to create and evaluate whether data sets adhere to FAIR principles. In this project, researchers developed a domain-agnostic, step-by-step assessment guide to evaluate if a given data set meets FAIR principles. They showcased its application with an open simulated data set...

Department of Energy - Feb 16, 2024

DOE-funded research first-ever atomic freeze-frame of liquid water

...An international team of scientists has isolated the energetic movement of an electron in a sample of liquid water — while “freezing” the motion of the much larger atom it orbits. The finding reveals the immediate response of an electron when hit with an X-ray, an essential step in understanding the effects of radiation exposure on objects and people. The collaboration used a combination of experiments and theoretical insights to see in real time what happens when ionizing radiation from an X-ray source hits matter. Revealing these moments is not as simple as snapping a photo. Subatomic particles move so fast that capturing their actions requires using a probe that can measure time in attoseconds. There are more attoseconds in a second than there have been seconds in the history of the universe. ... “Using the Hyak supercomputer at the University of Washington, we developed a cutting-edge computational chemistry technique that enabled detailed characterization of the transient high-energy quantum states in water,” said Li, who is also UW Associate Vice Provost for research cyberinfrastructure and member faculty at the UW Clean Energy Institute. The research was funded by the U.S.

Department of Energy...

College of Arts and Sciences - Feb 15, 2024

Artificial Intelligence / Machine Learning

NIST Researchers Suggest Historical Precedent for Ethical AI Research

...If we train artificial intelligence (AI) systems on biased data, they can in turn make biased judgments. A multidisciplinary team of researchers at the National Institute of Standards and Technology (NIST) is suggesting we should apply the three principles — summarized as “respect for persons, beneficence and justice” — are the core ideas of 1979’s watershed Belmont Report, a document that has influenced U.S. government policy on conducting research on human subjects. The Belmont Report arose from an effort to respond to unethical research studies. The regulations that require application of the Belmont Report’s principles apply only to government research. Industry, however, is not bound by them. The NIST authors are suggesting that the concepts be applied more broadly to all research that includes human subjects. Databases used to train AI can hold information scraped from the web, but the people who are the source of this data may not have consented to its use — a violation of the “respect for persons” principle. NIST authors mention that a major concern with AI research is inappropriate exclusion, which can create bias in a dataset against certain demographics. Past research has shown that face recognition algorithms trained primarily on one demographic will be less capable of distinguishing individuals in other demographics. Applying the report’s three principles to AI research could be fairly straightforward, the authors suggest...

National Institute of Standards and Technology - Feb 15, 2024

NSF, NIH partner on new research to develop RNA-based methods for biotech innovations

...The U.S. National Science Foundation has awarded over \$12.7 million across nine research teams to understand better the untapped capabilities of ribonucleic acid (RNA) for potentially far-reaching biotechnology applications, from disease prevention in crops to cancer-fighting therapies. The nine teams will each receive \$1 million to \$1.65 million from NSF through the Molecular Foundations for Biotechnology (MFB) program, a joint effort of NSF in partnership with the National Institutes of Health's National Human Genome Research Institute (NHGRI). The teams include experts in a range of fields from chemistry, biology and physics to mathematical modeling and machine learning. Their projects are expected to provide opportunities to partner with industry to translate knowledge gained in the lab into marketable new biotechnologies. The teams and their projects include:

* Better Homologous Folding using Computational Linguistics and Deep Learning (Oregon State University and the University of Rochester); * RNA Modifications of Frameshifting Stimulators: Cellular Platforms to Engineer Gene Expression by Computational Mutation Predictions and Functional Experiments (New York University and the University of North Carolina at Chapel Hill)...

NSF-funded MIT engineers developed a tiny, tamper-proof ID tag that can authenticate almost anything

...MIT researchers invented a cryptographic ID tag that is several times smaller and significantly cheaper than the traditional radio frequency tags (RFIDs) that are often affixed to products to verify their authenticity. But this terahertz tag shared a major security vulnerability with traditional RFIDs: A counterfeiter could peel the tag off a genuine item and reattach it to a fake, and the authentication system would be none the wiser. The researchers leveraged terahertz waves to develop an antitampering ID tag that still offers the benefits of being tiny, cheap, and secure. But when it came time to test the antitampering tag, it was very difficult and time-consuming to take precise enough measurements to determine whether two glue patterns are a match. They tackled the problem using AI. They trained a machine-learning model that could compare glue patterns and calculate their similarity with more than 99 percent accuracy. This work is supported by the U.S. National Science Foundation...
MIT News - Feb 18, 2024

Robotics / Autonomous Vehicles

S&T Tests Cutting-Edge Counter-Drone Technology

...To defend against the malicious use of drones, the Science & Technology Directorate (S&T) evaluated innovative counter-unmanned aircraft systems (C-UAS) technologies, a.k.a. counter-drone technologies, during two live demonstrations. S&T issued two public requests for information in April to gather data from vendors regarding existing counter-drone technologies and then down selected the most promising ones to participate in the demonstrations. S&T partnered with the University of North Dakota (UND), which is part of the FAA's Center of Excellence for Unmanned Air Systems. UND, in collaboration with the NPUASTS team, delivered its report in late October, providing S&T its first analysis of the technologies demonstrated and their collateral effects. The second demonstration evaluated potential non-kinetic solutions capable of detecting, tracking, identifying, and countering swarms of small UAS that are being controlled remotely. It also assessed technologies available to detect and mitigate against drones that emit little or no radio frequency (RF) signals, noise, or emissions; these are known as "dark" drones. When used in unison for nefarious purposes, drone swarms could interfere with first responders attempting to respond to an incident at an event with national or international importance, or for a distributed assault on critical infrastructure...
Homeland Security - Feb 27, 2024

Quantum

Scientists Observe Long-Predicted Superconductor Property Using a Quantum Simulator

...At cold temperatures, superconducting materials allow electricity to flow indefinitely while expelling outside magnetic fields, causing them to levitate above magnets. Quantum theory has predicted intriguing behaviors when a superconductor is driven out of equilibrium. But it has been challenging to perturb these materials in the lab without disrupting their delicate superconducting properties, leaving these predictions untested. Scientists can obtain surprisingly deep insights into superconductivity by studying it with fully controllable arrays of atoms in a gas. That is the approach of a research collaboration at JILA, a joint institute of the National Institute of Standards and Technology (NIST) and the University of Colorado Boulder. JILA researchers caused a gas of strontium atoms to act like a superconductor. Even though the strontium atoms themselves are not superconducting, they follow the same rules of quantum physics. By throwing the atoms out of equilibrium, the researchers saw changes in atomic interactions that would affect the properties of actual superconductors. With their strontium gas acting as a "quantum simulator," the researchers were able to observe a behavior of superconductors that has been predicted to exist for years...

National Institute of Standards and Technology - Feb 14, 2024

Cybersecurity / Privacy

FACT SHEET: Biden-Harris Administration Announces Initiative to Bolster Cybersecurity of U.S. Ports

...The Biden-Harris Administration's Executive Order will bolster the security of the nation's ports, alongside a series of additional actions that will strengthen maritime cybersecurity, fortify our supply chains and strengthen the United States industrial base. It bolstered the Department of Homeland Security's authority to directly address maritime cyber threats, including through cybersecurity standards to ensure that American ports' networks and systems are secure. The actions are clear examples of the

President's work to invest in America, secure the country's supply chains, and strengthen the cybersecurity of our nation's critical infrastructure against 21st century threats – priorities his Administration has focused on relentlessly since taking office....

The White House - Feb 21, 2024

NIST Releases Version 2.0 of Landmark Cybersecurity Framework

...The National Institute of Standards and Technology (NIST) has updated the widely used Cybersecurity Framework (CSF), its landmark guidance document for reducing cybersecurity risk. The new 2.0 edition is designed for all audiences, industry sectors and organization types, from the smallest schools and nonprofits to the largest agencies and corporations — regardless of their degree of cybersecurity sophistication. The CSF 2.0, which supports implementation of the National Cybersecurity Strategy, has an expanded scope that goes beyond protecting critical infrastructure, such as hospitals and power plants, to all organizations in any sector. It also has a new focus on governance, which encompasses how organizations make and carry out informed decisions on cybersecurity strategy. The CSF's governance component emphasizes that cybersecurity is a major source of enterprise risk that senior leaders should consider alongside others such as finance and reputation. New adopters can learn from other users' successes and select their topic of interest from a new set of implementation examples and quick-start guides designed for specific types of users, such as small businesses, enterprise risk managers, and organizations seeking to secure their supply chains. A new CSF 2.0 Reference Tool now simplifies the way organizations can implement the CSF, allowing users to browse, search and export data and details from the CSF's core guidance in human-consumable and machine-readable formats...

National Institute of Standards and Technology - Feb 26, 2024

New DOE-Funded Initiative Outlines Proposed Cybersecurity Baselines for Electric Distribution Systems and Distributed Energy Resources

...The U.S. Department of Energy (DOE) applauds the release of cybersecurity baselines for electric distribution systems and distributed energy resources (DER) such as solar, wind, and storage. The initiative spearheaded by the National Association of Regulatory Utility Commissioners (NARUC), was funded by DOE's Office of Cybersecurity, Energy Security, and Emergency Response (CESER) and was guided by a steering group of industry and government subject matter experts including electricity sector owners and operators, state regulatory agencies, cybersecurity experts, and others. The 2023 National Cybersecurity Strategy called on DOE to promote cybersecurity for both electric distribution systems and for distributed energy resources infrastructure, and to do so in partnership with states and the energy industry. The guidance developed by NARUC, through CESER's funding, will help provide states with uniform cybersecurity baselines instead of creating a patchwork of cybersecurity requirements across the country...

Department of Energy - Feb 22, 2024

NSF and DOE establish a Research Coordination Network dedicated to enhancing privacy research

...The U.S. National Science Foundation and the U.S. Department of Energy (DOE) have established a Research Coordination Network (RCN) dedicated to advancing privacy research and the development, deployment and scaling of privacy enhancing technologies (PETs). Fulfilling a mandate from the "Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence," the initiative advances the recommendations in the National Strategy to Advance Privacy-Preserving Data Sharing and Analytics to move towards a data ecosystem where the beneficial power of data can be unlocked while protecting privacy. Led by the Future of Privacy Forum Education and Innovation Foundation, this RCN brings together experts from academia, industry and government to support the development, deployment and scaling of PETs. One of the primary goals of the RCN is to address the barriers to widespread adoption of PETs, including regulatory considerations. The team will prioritize use cases for PETs that support privacy-preserving machine learning and those essential for federal agencies to ensure the equitable use of AI...

National Science Foundation - Feb 26, 2024

FACT SHEET: DHS Moves to Improve Supply Chain Resilience and Cybersecurity Within Our Maritime Critical Infrastructure

...DHS has a strong and demonstrated track record in securing and safeguarding the maritime transportation system. Through existing security and safety regulations, DHS and its partners have forged a robust public-private partnership through contingency planning, exercises, grant funding, and response and recovery efforts. These relationships are all the more important as the industry and the country faces evolving cyber and technology challenges. The DHS Supply Chain Resilience Center (SCRC) is focused on near-term priorities to address supply chain risks resulting from threats and vulnerabilities inside U.S. ports. The SCRC recently convened key DHS decision-makers and stakeholders for a robust tabletop exercise designed to test the resilience of critical supply chains that connect through our domestic ports. The exercise reviewed how DHS would respond to a cyber-attack impacting ship-to-shore crane operability and how DHS would coordinate within the Department and the interagency...

Homeland Security - Feb 21, 2024

Using AI to develop enhanced cybersecurity measures

...A research team at Los Alamos National Laboratory is using artificial intelligence to address several critical shortcomings in large-scale malware analysis, making significant advancements in the classification of Microsoft Windows malware and paving the way for enhanced cybersecurity measures. This research introduces an innovative method using AI that is a significant breakthrough in the field of Windows malware classification. The approach achieves realistic malware family classification by leveraging semi-supervised tensor decomposition methods and selective classification, specifically, the reject option. This new method can accurately work with samples with both larger and

smaller datasets at the same time — called class imbalance — allowing it to detect both rare and prominent malware families. This could give security analysts the confidence to apply these techniques to practical high-stakes situations like cyber defense for detecting novel threats...

Los Alamos National Laboratory - Feb 15, 2024

Research contracts from Idaho National Lab advance Montana State's cybersecurity research

...Two research contracts from the Idaho National Laboratory are advancing the work of researchers at Montana State University's Software Engineering and Cybersecurity Laboratory. In January, INL awarded a \$255,000, three-year research contract to electrical and computer engineering professor Brock LaMeres and Clemente Izurieta, professor of computer science to fund a project called "Programmable Hardware Authenticity Self Evaluation. Also INL awarded \$210,000 to Bradley Whitaker, assistant professor of electrical and computer engineering, for a project "Artificial Neural Network Enabled Decode of Gigabit Ethernet." The malicious activities that concern LaMeres and Izurieta are called "side-channel attacks," which attackers use to passively monitor a computer system's power consumption. Sophisticated attackers can use that information to determine when the computer might be performing particular tasks, suggesting when the system is most vulnerable to attack. Previous countermeasures relied on software to forestall attackers, but that approach can create a signature decipherable by high-tech hackers. To eliminate these telltale signatures, the two scientists are building on technology LaMeres developed for computers used in space...

Montana State University - Feb 27, 2024

5G, Wireless Spectrum, Networking & Communications

Joint Statement Endorsing Principles for 6G: Secure, Open, and Resilient by Design

...Collaboration and unity are key to resolving pressing challenges in the development of 6G, and we hereby declare our intention to adopt relevant policies to this end in our countries, to encourage the adoption of such policies in third countries, and to advance research and development and standardization of 6G networks that fulfill the following shared principles: 1. Trusted Technology that is Protective of National Security 2. Secure, Resilient, and Protective of Privacy 3. Global Industry-led and Inclusive Standard Setting & International Collaborations 4. Cooperation to Enable Open and Interoperable Innovation 5. Affordability, Sustainability, and Global Connectivity 6. Spectrum and Manufacturing...

The White House - Feb 26, 2024

An American-Made Internet for All

...Under the Administration's Internet for All initiative, a core piece of President Biden's Investing in America Agenda, made-in-America requirements and historic funding for high-speed Internet infrastructure have already spurred significant progress towards that goal. Furthering the goals of the President's agenda to expand access to high-speed Internet service across America, NTIA released a Build America, Buy America (BABA) waiver for the \$42.45 billion Broadband Equity, Access, and Deployment (BEAD) Program. The majority of fiber broadband equipment—including optical fiber, fiber optic cable, key electronics, and enclosures—necessary to bring affordable and reliable high-speed Internet service to everyone in America will be made here in the United States...

National Telecommunications and Information Administration - Feb 23, 2024

NASA's Planetary Radar Images Slowly Spinning Asteroid

...On Feb. 2, a large asteroid safely drifted past Earth at a distance of about 1.8 million miles. Scientists at NASA's Jet Propulsion Laboratory in Southern California used a powerful radio antenna to better determine the size, rotation, shape, and surface details of this near-Earth object (NEO). Until this close approach, asteroid 2008 OS7 had been too far from Earth for planetary radar systems to image it. During the Feb. 2 close approach, JPL's radar group used the powerful 230-foot (70-meter) Goldstone Solar System Radar antenna dish at the Deep Space Network's facility near Barstow, California, to image the asteroid. What scientists found was that its surface has a mix of rounded and more angular regions with a small concavity...

National Aeronautics and Space Administration - Feb 26, 2024

Students, staff and faculty head to NASA launch of UH satellite

...A team of students and faculty from the University of Hawai'i at Mānoa are eagerly anticipating the launch of the Hyperspectral Thermal Imager (HyTI) satellite. The project's focus is to gather valuable data for understanding Earth's surface processes, including volcanic activity, wildfires and soil moisture levels. The HyTI satellite, equipped with onboard data processing capabilities, will deliver high-resolution thermal images, surpassing the capabilities of current sensors. These images will enable scientists and disaster response managers to analyze and respond to environmental events with precision and speed. "HyTI is the first NASA mission made in Hawai'i and possibly one of the most advanced 6U CubeSats in the world," said Miguel Nunes, deputy principal investigator and systems engineer for the HyTI Mission. The HyTI satellite, officially owned by NASA

and operated by the Hawai'i Space Flight Laboratory (HSFL)...
The Magazine of the University of Hawaii - Malamalama - Feb 27, 2024

Advanced Manufacturing

Manufacturing Innovation Blog: How to Avoid 3 Common Missteps in Pursuing International Sales

...Exporting allows manufacturers to diversify their customer base, tap into new markets, and mitigate the impact of economic fluctuations in any one region. Embracing a global perspective fosters innovation and acts as a catalyst for efficiency improvements. ExporTech™ is an export accelerator offered by the MEP National Network™ and the U.S. Commercial Service (USCS). Keep in mind that each new country you enter may bring a new language, customs, and regulatory issues. Companies sometimes target too many countries or markets and spread themselves too thin. When selecting markets, use a micro approach instead of a macro approach to evaluate a country's market size and sales potential. The selection of your channel partners on the ground to handle sales, marketing, service, and repair is critical to your success. Have a clear profile of what an ideal channel partner looks like, just as you would for an ideal customer. When dealing with foreign markets, manufacturers are understandably concerned about getting paid. This is where Export-Import Bank of the United States (EXIM) trade credit insurance comes in...
National Institute of Standards and Technology - Feb 16, 2024

Stitch3D is powering a new wave of 3D data collaboration with the U.S. Navy, Air Force and DOD

...The problems associated with sharing, analyzing, and even viewing 3D files have become more apparent. The issue is that many popular cloud service providers aren't compatible with 3D files. That means in order to preview a 3D scan, users need to download the files onto a desktop 3D app. Stitch3D is helping workers get the most out of 3D data with a cloud platform that allows users to manage, analyze, and share 3D files of any size and format. The company's suite of tools lets workers collaborate on 3D files, visualize their data on any browser or mobile device, and even layer 3D scans onto real-world maps. Clark Yuan MBA '22 went through an accelerator with the Navy in 2020, where he formulated the idea for a cloud-based 3D sharing system. Stitch3D's platform can create 3D models from scans instantly and provide a number of high-end analytics useful for different industries. Stitch3D has since gotten interest from law enforcement agencies, insurers, and construction firms in addition to its work with the U.S. Navy, Air Force, and Department of Defense. Yuan believes the number of industries it works in will continue to grow as 3D data becomes more common...
MIT News - Feb 16, 2024

Microelectronics

Department of State and Arizona State University Announce New ITSI Initiative

...The U.S. Department of State, Bureau of Economic and Business Affairs, awarded a \$13.8 million cooperative agreement (CA) to Arizona State University (ASU) under the International Technology Security and Innovation (ITSI) Fund, created by the CHIPS Act of 2022. This new initiative will bolster the assembly, testing, and packaging (ATP) capabilities in ITSI partner countries in the Americas and Indo-Pacific, enhancing a resilient supply chain for U.S. semiconductor manufacturers. This multi-regional initiative, led by State and ASU's Ira A. Fulton Schools of Engineering, marks the beginning of the next phase of the Department's ITSI-related efforts, builds on the ongoing ecosystem reviews, and will contribute to the growth and diversification of the global semiconductor ecosystem...
U.S. Department of State - Feb 20, 2024

Climate Change / Green Energy & IT

Biden-Harris Administration invests \$3.9 million for Ocean-based Climate Resilience Accelerators through Investing in America agenda

...The Department of Commerce and NOAA announced \$3.9 million in awards to help small businesses improve climate resilience in communities across the nation through the Ocean-based Climate Resilience Accelerators program as part of President Biden's Investing in America agenda, and in alignment with the National Climate Resilience Framework. This investment, funded by the Inflation Reduction Act, supports 16 awardees in 11 states to develop and advance new technologies for gathering coastal, ocean and Great Lakes data to build tools, products, and services that address climate resilience needs and create a climate-ready nation. The Ocean-based Climate Resilience Accelerator program will support businesses developing ocean observation technologies and information services, such as forecasts and digital apps, to enhance climate

resilience...

National Oceanic and Atmospheric Administration - Feb 20, 2024

Argonne scientists use AI to identify new materials for carbon capture

...A suitable material for effective carbon capture at low cost has yet to be found. One candidate is metal-organic frameworks, or MOFs. This porous material can selectively absorb carbon dioxide. There are countless potential MOF configurations for scientists to design and test. Researchers from the U.S. Department of Energy's (DOE) Argonne National Laboratory are following several pathways, such as generative artificial intelligence. By exploring the MOF design space with generative AI, the team was able to quickly assemble, building block by building block, over 120,000 new MOF candidates within 30 minutes. They ran these calculations on the Polaris supercomputer at the Argonne Leadership Computing Facility (ALCF). They then turned to the Delta supercomputer at UIUC to carry out time-intensive molecular dynamics simulations, using only the most promising candidates. The goal is to screen them for stability, chemical properties and capacity for carbon capture. The work was supported by DOE's Office of Science, Office of Advanced Scientific Computing Research, laboratory-directed research and development funds, and the National Science Foundation...

Argonne National Laboratory - Feb 14, 2024

NSF and DOE support research to combat climate change with viruses that can help 'dial up' carbon capture in the sea

...Armed with a catalog of hundreds of thousands of DNA and RNA virus species in the world's oceans, scientists are now zeroing in on the viruses most likely to combat climate change by helping trap carbon dioxide in seawater. The researchers developed AI-based analytics to identify from thousands of viruses which few are "VIP" viruses to culture in the lab and work with as model systems for ocean geoengineering. Or, using similar techniques, different viruses that may prevent methane's escape from thawing Arctic soil. By combining genomic sequencing data with artificial intelligence analysis, researchers have identified ocean-based viruses and assessed their genomes to find that they "steal" genes from other microbes or cells that process carbon in the sea. Having mined this massive trove of data via advances in computation, the team has now revealed which viruses have a role in carbon metabolism and are using this information in newly developed community metabolic models to help predict how using viruses to engineer the ocean microbiome toward better carbon capture would look. The oceans work is supported by the National Science Foundation and the soils work has been funded by the Department of Energy and NSF...

Ohio State News - Feb 17, 2024

NSF-funded researchers develop plan for Global Center focused on Blue Climate Solutions

...URI researchers and the Global Center for Blue Climate Solutions has established a team of social, natural and data scientists and engineers with engaged international communities. The goal is to accelerate inclusive science and education, harness data, and implement AI, all in support of informed and equitable decisions for mangrove and seagrass conservation and restoration. Funded through the National Science Foundation Global Centers: Use-Inspired Research Addressing Global Challenges in Climate Change and Clean Energy, Blue Climate Solutions will use \$250,000 over a two-year period to collaborate internationally to design a new global center for research on blue solutions for climate change. The team will conduct a proof-of-concept study to develop AI techniques to predict areas of habitat loss, project changes in carbon and ecosystem benefits, and design potential solutions with stakeholders, with an emphasis on Indigenous Peoples and local communities and youths in Indonesia as citizen scientists...

University of Rhode Island - Feb 15, 2024

NSF-funded 'scientists' warning' on climate and technology

...Researchers at the University of California, Irvine, the University of Kansas and Oregon State University have suggested that industrial civilization's best way forward may entail embracing further technological advancements but doing so with greater awareness of their potential drawbacks. They stress that innovations, particularly in the fields of clean energy and artificial intelligence, will come with risks but may be the most effective way to ensure a sustainable future. In addition to clean energy technologies, the warning's authors look to artificial intelligence as a way to point human civilization toward a more sustainable tomorrow. They mention how AI is being used currently to connect wildlife habitats, monitor methane emissions and optimize supply chains. "In our scientists' warning, we identify an array of potential future risks from both electrification and AI. We believe that these outcomes are substantially less problematic than these technologies' potential benefits from addressing the pressing environmental crises that humanity is currently facing." This project received funding from the National Science Foundation...

UCI News - Feb 15, 2024

Digital Health

SARS-CoV-2 fragments may cause problems after infection

...It's not clear why SARS-CoV-2 can cause such inflammation while other coronaviruses responsible for common colds don't. One way the immune system fights viruses is by

breaking down the viral proteins into small fragments called peptides. An NIH-funded research team—led by Dr. Gerard Wong at the University of California, Los Angeles, in collaboration with Richard L. Gallo at the University of California, San Diego—investigated whether these peptides could continue to activate the immune system. The team used machine learning to search SARS-CoV-2 proteins for fragments that resemble molecules called antimicrobial peptides (AMPs). The body makes these molecules as part of its defense against infections. The researchers studied three SARS-CoV-2 fragments that both resembled AMPs and had a large positive charge. These fragments were also found in the airways of patients with severe COVID-19...

National Institutes of Health - Feb 26, 2024

NIST, Nonprofit Research Consortium to Develop Safety Tools for Synthetic Biology to Defend Against Potential Misuse of AI

...The U.S. Department of Commerce's National Institute of Standards and Technology (NIST) has entered a two-year cooperative research agreement with the nonprofit Engineering Biology Research Consortium (EBRC) to develop screening and safety tools to defend against the potential misuse of artificial intelligence (AI) related to nucleic acid synthesis, a growing field of synthetic biology. The Executive Order on AI calls on NIST to initiate an effort to engage with industry and other stakeholders to develop safeguards to defend against potential misuse of AI related to the synthesis of genetic material. NIST will work with EBRC to identify best practices and policies to ensure public safety. Researchers have used synthetic nucleic acids to achieve groundbreaking biotechnology innovations, such as new drugs and therapies, but the growing availability and ease of synthesizing nucleic acids has raised safety concerns. Artificial intelligence (AI) has the potential to help develop biotechnologies that can improve human health or that may increase harm...

National Institute of Standards and Technology - Feb 16, 2024

Digital Health Company Experiences Using EHR APIs

...New research from a survey of digital health companies shows that most companies (73%) use standards-based application programming interfaces (APIs) when integrating with electronic health records (EHRs). The Cures Act Final Rule required developers of these certified APIs to adopt the FHIR standard and respective implementation guides by December 31, 2022. The survey data, collected prior to the December 2022 deadline, show that not only do most digital health companies who integrate their apps or software with EHRs use the FHIR standard as part of their products, but also that companies who connect with multiple EHRs use these standards-based APIs at higher rates. ONC projects like Lantern and Inferno strive to improve the resources and data available to digital health companies. ONC's information blocking regulations reinforce and support a patient's ability to access their EHI, including through an app of their choice...

Health IT - Feb 15, 2024

DHS Safety and Security Resources for Health Care Providers, Including Pharmacies

...DHS has several resources available to support healthcare providers, including pharmacies, to prevent and defend against threats to both physical and cyber infrastructure. These include: * Health Care and Public Health Cybersecurity Toolkit – fundamental cyber hygiene steps that help organizations progress to implement more advanced cyber defenses to stay ahead of current threats. * Cyber Guidance for Small Businesses – action plan informed by the way cyber-attacks actually happen, includes a breakdown of tasks and lays the groundwork for building an effective security program. * Tabletop Exercises for Health Care and Public Health – downloadable packages with tailorable materials to conduct independent exercises, including scenarios for active shooters, suspicious packages, bombings, and cyber incidents. * [NEW!] Resources for Individuals on the Threat of Doxing – proactive steps individuals can take to prevent themselves from doxing. and more...

Homeland Security - Feb 26, 2024

K-State engineer receives NSF grant to explore using machine learning and organ-on-a-chip to reduce animal testing in drug development

...A Kansas State University assistant professor of engineering is working to develop a framework that better predicts disease progression and complications from drug interactions than traditional methods like animal testing. Davood B. Pourkargar has received a \$245,000 grant from the National Science Foundation to enhance the understanding of drug delivery dynamics through a multiscale modeling framework utilizing organ-on-a-chip experiments and machine learning. The hybrid model being developed will surpass standard machine learning-based models, accurately extrapolating and interpolating organ-on-a-chip data with enhanced analytical simplicity, interpretability and a reduced need for training samples...

Kansas State University - Feb 19, 2024

Other IT Related

FACT SHEET: Biden-Harris Administration Releases Annual Agency Equity Action Plans to Further Advance Racial Equity and Support for Underserved Communities Through the Federal Government

...Through the implementation of two historic Executive Orders on equity and the President's landmark Investing in America Agenda and other key legislation, the Biden-Harris Administration is working to advance opportunity and make real the promise of America for everyone. Federal agencies, including all Cabinet-level agencies, are releasing their 2023 Equity Action Plans, which include over 100 community-informed strategies and actions to address systemic barriers in our Nation's policies and programs. The Biden-Harris Administration also released a new White House Progress Report on Equity, which highlights examples of the more than 650 actions agencies have undertaken since the release of their 2022 Equity Action Plans. Agencies acted to increase access to federal contracting dollars, capital, and lending programs for small disadvantaged businesses; reduce discrimination in the housing market; advance environmental justice and invest in disadvantaged communities; address health disparities, including disparities in maternal health outcomes in communities of color; build economic prosperity in rural communities; promote equity and fairness in the justice system; support victims and survivors of gender-based violence; root out bias in the design and use of new technologies, such as artificial intelligence; and bolster civil rights enforcement...

The White House - Feb 14, 2024

NSF invests \$9.8M to advance equitable water solutions

...The U.S. National Science Foundation is advancing equitable water solutions, investing \$9.8 million in 15 multidisciplinary teams selected for Phase 1 of the NSF Convergence Accelerator program's Track K: Equitable Water Solutions. Track K builds upon NSF's investment in foundational research and two NSF-funded workshops from the NSF Convergence Accelerator's ideation process, "Managing Water for a Changing Planet," and "Climate Resilience and Water Resources." Workshop findings identified an urgent need to combine existing knowledge with advancements in areas such as the environmental sciences, geosciences, computing to create new technologies and solutions to challenges such as freshwater supply and management; and resiliency against rising temperatures, drought and pollution. "Ensuring safe and equitable water resources while incorporating environmentally sustainable practices is imperative to our future," said Erwin Gianchandani, NSF assistant director for Technology, Innovation and Partnerships (TIP)...

National Science Foundation - Feb 15, 2024

Defense Innovation Board: Scaling Innovation Forward

...The Defense Innovation Board's sole focus is to provide advice and recommendations on scaling and catalyzing innovation in the department. The DIB provides independent, practical and actionable advice and recommendations to advance innovation within DOD, in several areas, including artificial intelligence, software, data, digital transformation, culture change and workforce development. The first two completed studies focused on building the National Defense Science and Technology Strategy and tackling the "valley of death," the varying span of time it takes for a vendor to transition a prototype or commercially available product to a DOD contract and the latest two completed studies focused on lowering barriers to innovation and building a DOD data economy. Currently, the DIB has undertaken two new additional studies to tackle and scale innovation from two different, yet related, angles: optimizing how we innovate with our allies and partners and how to align incentives to drive faster tech adoption at the department...

U.S. Department of Defense - Feb 20, 2024

STEM / Workforce & IT

Collegiate cyber defenders shine in CyberForce® Program's inaugural Conquer the Hill – Command Edition competition

...The U.S. Department of Energy's (DOE) Office of Cybersecurity, Energy Security, and Emergency Response (CESER) and DOE's Argonne National Laboratory announced the winners of the inaugural CyberForce® Conquer the Hill — Command Edition competition. Seventy-five participants in both levels put their skills to the test to complete a series of security-focused IT administration tasks designed to mirror real-world support for the U.S. energy grid infrastructure. Conquer the Hill – Command Edition is one of three Conquer the Hill virtual, individual-based competitions that aim to help students build their cybersecurity skills prior to the annual team-based CyberForce Competition. The other two Conquer the Hill Competitions are Adventurer Edition and Reign Edition. The CyberForce Program's goal is to help develop a U.S. workforce that can fill them. The CyberForce Program® also features quarterly webinars. The next webinar is on March 13, at 7 p.m. ET. Additionally, there will be two virtual career fairs in 2024. These activities allow students to evaluate their cybersecurity skills, build confidence, and learn about the energy sector...

Department of Energy - Feb 20, 2024

NSF-funded program to help STEM professionals pivot into quantum information science careers

...University of Rhode Island is teaming with the MITRE Corp. on an initiative – Quantum Pivot – to help professionals with STEM experience build the skills and knowledge to transition into career pathways in quantum information science and technology. URI was awarded a three-year, \$998,667 grant from the National Science Foundation's new Experiential Learning for Emerging and Novel Technologies, a program that aims to grow and diversify the workforce in key emerging technologies. It provides STEM professionals in any field with experiential learning opportunities, training and mentoring to transition into careers in quantum information science and technology. For the NSF initiative, URI will build on its established, one-year online Quantum Computing Graduate Certificate program, which will graduate its first cohort of students this spring. The NSF

grant will also fund such areas as a remote lab for students, scholarships, and recruitment, with an eye toward diversifying the workforce...
University of Rhode Island - Feb 14, 2024

STEM Students Find Success with Help from the NSF

...In November 2021, Millersville University was awarded a \$1.5 million grant from the National Science Foundation Scholarships in STEM program. The grant has gone on to provide a myriad of resources for STEM students, providing them with financial resources and real-world experiences. The NSF S-STEM program provides financial and support services of up to \$10,000 each year to a group of STEM students, renewable for up to four years. The program's primary goals are to increase recruitment, retention and graduation of STEM students and their persistence in the field beyond the grant. The program currently supports 19 students in a variety of STEM disciplines including: biology, chemistry, computer science, earth science, mathematics, physics and robotics. The program will welcome 10 additional first-year students in the fall of 2024. Over the summer after their first year, each S-STEM scholar participates in The Workforce Development Program, which is a paid immersive and research-based experience...
Millersville University of Pennsylvania - Feb 27, 2024

NSF-funded STARS Computing Corps increases representation in computing disciplines

...The STARS Computing Corps is a national alliance sponsored by the National Science Foundation (NSF) that promotes participation, persistence and career advancement in computing disciplines for historically underrepresented populations. The initiative supports undergraduate and graduate students, as well as university faculty members. Purdue University Northwest (PNW) applied and formed a chapter in the fall of 2022. The formation was completed in tandem with a departmental Broadening Participation in Computing plan submitted to the NSF detailing how PNW would contribute to a discipline-wide mission for supporting diversity in computing. Grant funding from the STARS Corps and the Indiana Academy of Science additionally supports the chapter's activities. The Computer Science department's Broadening Participation in Computing plan provides a comprehensive approach to increasing interest and enrollment for historically underrepresented students, as well as fostering student success in the program. Several of these initiatives include: developing inclusive curriculum and teaching practices; coordinating outreach to local middle and high school students to encourage interest in computing disciplines; strengthening current pathway programs and transfer students; and collaborating with ongoing PNW Hispanic-Serving Institution initiatives...
Purdue University Northwest - Feb 22, 2024

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.

The Networking and Information Technology Research and Development (NITRD) Program - Jan 1, 2024

FEDERAL HIGH END COMPUTING INFORMATION PORTAL

...Networking and Information Technology Research and Development (NITRD) has a portal that provides information about U.S. Federal government high performance computing activities, including available computing resources; relevant publications; fellowship and training opportunities; and technology transfer, licensing, and industry engagement opportunities. The High End Computing (HEC) Interagency Working Group (IWG) agencies provide the information contained in this portal. HEC IWG agencies are involved in various Federal activities in the HEC area including R&D and providing infrastructure and application. Take a look at it!

Networking and Information Technology Research and Development - Dec 19, 2023

Note: Any mention in the text of commercial, non-profit, academic partners, or their products, or references is for information only; it does not imply endorsement or recommendation by any U.S. Government agency.

Innovation Through NITRD Coordination

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

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