



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 and voilà they will receive the news brief with the cool technology articles each week!

HPC

NIH funds research on how the brain may learn about the world the same way as some computational models

...How does the brain develop that intuitive understanding? Many scientists believe that it may use a process similar to what's known as "self-supervised learning." This type of machine learning, originally developed as a way to create more efficient models for computer vision, allows computational models to learn about visual scenes based solely on the similarities and differences between them, with no labels or other information. A pair of studies from researchers at MIT offers new evidence supporting this hypothesis. The researchers found that when they trained models known as neural networks using a particular type of self-supervised learning, the resulting models generated activity patterns very similar to those seen in the brains of animals that were performing the same tasks as the models. The research was funded by the National Institutes of Health...

MIT News - Oct 30, 2023

Artificial Intelligence / Machine Learning

FACT SHEET: President Biden Issues Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence

...President Biden is issuing a landmark Executive Order to ensure that America leads the way in seizing the promise and managing the risks of artificial intelligence (AI). The Executive Order establishes new standards for AI safety and security, protects Americans' privacy, advances equity and civil rights, stands up for consumers and workers, promotes innovation and competition, advances American leadership around the world, and more. The Executive Order directs the following actions: * New Standards for AI Safety and Security *Protecting Americans' Privacy * Advancing Equity and Civil Rights * Standing Up for Consumers, Patients, and Students * Supporting Workers *Promoting Innovation and Competition * Advancing American Leadership Abroad * Ensuring Responsible and Effective Government Use of AI ... The actions that President Biden directed today are vital steps forward in the U.S.'s approach on safe, secure, and trustworthy AI...

The White House - Oct 30, 2023

NIST Seeks Collaborators for Consortium Supporting Artificial Intelligence Safety

...he U.S. Department of Commerce's National Institute of Standards and Technology (NIST) is calling for participants in a new consortium supporting development of innovative methods for evaluating artificial intelligence (AI) systems to improve the rapidly growing technology's safety and trustworthiness. This consortium is a core element of the new NIST-led U.S. AI Safety Institute announced yesterday at the U.K.'s AI Safety Summit 2023, in which U.S. Secretary of Commerce Gina Raimondo participated. The institute and its consortium are part of NIST's response to the recently released Executive Order on Safe, Secure, and Trustworthy Development and Use of AI. Interested organizations with relevant technical capabilities should submit a letter of interest by Dec. 2, 2023. NIST plans to host a workshop on Nov. 17, 2023, for those interested in learning more about the consortium...

National Institute of Standards and Technology - Nov 2, 2023

NSF invests \$10.9M in the development of safe artificial intelligence technologies

...The U.S. National Science Foundation today announced an investment of \$10.9 million to support research that will help ensure advances in artificial intelligence go hand in hand with user safety. The objective of the Safe Learning-Enabled Systems program, a partnership between NSF, Open Philanthropy and Good Ventures, is to foster foundational research that leads to the design and implementation of safe computerized learning-enabled systems — including autonomous and generative AI technologies — that are both safe and resilient. These awards represent key NSF investments in AI by designing resilient automated systems with clear and precise end-to-end safety constraints that have been rigorously tested to ensure that unsafe behaviors will not arise when deployed...

National Science Foundation - Oct 31, 2023

NOAA uses Artificial Intelligence to translate forecasts, warnings into Spanish and Chinese

...Through a series of pilot projects over the past few years, NOAA's National Weather Service (NWS) forecasters have been training artificial intelligence (AI) software for weather, water and climate terminology in Spanish and Simplified Chinese, the most common languages in the United States after English. NWS will add Samoan and Vietnamese next, and more languages in the future. Phase one of the project is today's launch of an experimental language translation website that NWS is seeking public comment on through September 29, 2024. Public review and feedback on the translations will inform future expansion of this project and assure that NWS is providing the best possible translation services to our customers. To accomplish its new translation services, NWS teamed up with Lilt, a machine learning company specializing in large language models focused on multilingual customer experiences. Through pilot projects, NWS scientists have trained the Lilt language model in weather terminology. The use of artificial intelligence in language translation offers many benefits, including higher accuracy to minimize risk from manual translation errors; the ability for forecasters to more easily check and edit the translations...

National Oceanic and Atmospheric Administration - Oct 26, 2023

NSF announces \$16M to strengthen and diversify artificial intelligence research capacity

...The U.S. National Science Foundation today announced the latest recipients of the Expanding AI Innovation through Capacity Building and Partnerships (ExpandAI) program. The \$16.3 million investment seeks to advance artificial intelligence innovation by strengthening and broadening participation in AI research and education at minority-serving institutions (MSIs) while fostering the development of a diverse, well-trained national AI workforce. ExpandAI seeks to provide critical support to institutions that serve historically underrepresented communities, helping them build robust research programs in the field of AI and related areas. These awards represent a profound investment in MSIs and underscore their important contributions to scientific innovation and discovery. ExpandAI also aims to create partnerships between awardee institutions and NSF-led National AI Research Institutes...

National Science Foundation - Oct 31, 2023

Landslide alerts, maps focus of new Pacific Disaster Center/NASA tool uses machine learning

...Through a partnership with NASA, a robust new tool to identify, track and respond to rainfall triggered landslides is now available to all users of the free Pacific Disaster Center's (PDC) DisasterAWARE software. NASA's Landslide Hazard Assessment for Situational Awareness model (LHASA) has been integrated into the PDC's multi-hazard monitoring, alerting and decision-support platform. LHASA uses a machine learning model that combines data on ground slope, soil moisture, snow, geological conditions, distance to faults and the latest near real-time precipitation data. The model has been trained on a database of historical landslides and the conditions surrounding them, allowing it to recognize patterns that indicate a landslide is likely. The PDC's flagship DisasterAWARE software provides early warnings and risk assessment tools for 19 types of natural hazards and supports decision-making by a wide range of disaster management agencies, local governments and humanitarian organizations. "The LHASA model is all open-source and leverages publicly available data from NASA and partners," said Dalia Kirschbaum, lead of the NASA landslides team and director of Earth Sciences at NASA's Goddard Space Flight Center. Kirschbaum and her team were awarded the NASA Software of the Year award for their work developing LHASA...
The Magazine of the University of Hawaii - Malamalama - Oct 26, 2023

Major DOE Grant to Facilitate High Research Activity on Contemporary Artificial Intelligence

...Cleveland State University was awarded a grant for \$600,000 to aid in Mobilizing the Emerging Diverse AI Talent (MEDAL) through Design and Automated Control of Automated Scientific Laboratories. The MEDAL project aims to train faculty, doctoral, graduate, and undergraduate students with high research activity on contemporary artificial intelligence (AI) research relevant to the Department of Energy. This includes topics such as transformers, large language models, pre-trained visual and scientific models, and data-driven control of autonomous scientific labs. Ultimately, this project will really help Cleveland State University to pursue follow-up grant funding from the Department of Energy...
Cleveland State University - Oct 27, 2023

Alondra Nelson Named to U.N. High-Level Advisory Body on AI by the Department of State

...Alondra Nelson, Harold F. Linder Professor in the School of Social Science, has been named the United States representative to the United Nations High-Level Advisory Body on Artificial Intelligence. The new AI Advisory Body is a significant step in the U.N. efforts to address issues in the international governance of artificial intelligence. It will foster a globally inclusive approach that brings together experts from government, the private sector, the research community, civil society, and academia. The Body's immediate tasks include building a global scientific consensus on risks and challenges, helping harness AI for humanity, and strengthening international cooperation on AI governance. The Body will help bridge other existing and emerging initiatives on AI governance, and issue preliminary recommendations by the end of 2023, with final recommendations by summer 2024, ahead of the Summit of the Future. Nominated to the U.N. AI Advisory Body by the Biden-Harris Administration through the U.S. Department of State, Nelson will serve in her personal capacity...
Institute for Advanced Study - Oct 26, 2023

Robotics / Autonomous Vehicles

Radiation-Detecting Drone Soars Over Portsmouth for Collaborative Testing

...A drone outfitted with radiation detectors recently underwent testing at the Portsmouth Site for potential future use as part of growing collaboration between Office of Environmental Management (EM) and the state of Ohio. The successful drone testing collected data for Ohio Department of Health to further develop its procedures and policies. EM will also evaluate the data to determine if the technology is beneficial for use at its cleanup sites. The drone has video and photographic capabilities, and can connect wirelessly to a laptop. Data can also be shared through a smartphone app...
Department of Energy - Oct 31, 2023

Quantum

Department of Energy Announces \$11.4 Million for Research on Quantum Information Science for Fusion Energy Sciences

...The U.S. Department of Energy (DOE) announced \$11.4 million for six projects in quantum information science (QIS) with relevance to fusion and plasma science. The Fusion Energy Sciences (FES) program supports fundamental research to expand the understanding of matter at very high temperatures and densities and to build the scientific foundation needed to develop a fusion energy source. The QIS portfolio within FES supports research opportunities outlined in the 2018 Fusion Energy Sciences Roundtable on Quantum Information Science report. Projects funded in this announcement will advance quantum algorithms relevant to fusion and plasma physics on existing and near-term quantum computers, develop novel high-sensitivity measurement techniques for plasmas, and explore the use of high energy density physics methods for novel QIS materials discovery and synthesis...

Department of Energy - Oct 30, 2023

Texas Tech Professor Receives More Than \$1 Million from NSF and DOE to Study Quantum Entanglement

...Texas Tech University's Lu Wei received two separate grants to study different aspects of quantum entanglement. The first grant, from the National Science Foundation (NSF) will allow Wei to look at entanglement from the theoretical side, while the second grant, from the U.S. Department of Energy (DOE) will be geared toward the applications to quantum algorithms and results verification in collaboration with a DOE lab. The NSF awarded Wei \$320,057 in a three-year that and targets developing a new theoretic framework for the analysis and design of quantum algorithms by connecting algorithm performance to the degree of entanglement of quantum states. The three-year grant of \$750,000 from the DOE led by Wei focuses on applications to quantum information processing...

Texas Tech Today - Oct 25, 2023

DOE/ARO/NSF/ONR fund a breakthrough synthesis method that improves solar cell stability

...A process developed by Rice University chemical and biomolecular engineer Aditya Mohite and collaborators yields 2D perovskite-based semiconductor layers of ideal thickness and purity by controlling the temperature and duration of the crystallization process. Known as kinetically controlled space confinement, the process could help improve the stability and reduce the cost of halide perovskite-based emerging technologies like optoelectronics and photovoltaics. The researchers created a map – or phase diagram – of the process through characterization, optical spectroscopy and machine learning. This research breakthrough is critical for the synthesis of 2D perovskites, which hold the key to achieving commercially relevant stability for solar cells and for many other optoelectronic device applications and fundamental light matter interactions. The research was supported by the Department of Energy, the Army Research Office, the National Science Foundation, and the Office of Naval Research...

RICE NEWS - Oct 26, 2023

Cybersecurity / Privacy

Infographic – Integrating Cybersecurity With Industry 4.0: What It Means for Manufacturing

...A new infographic details some of the risks posed by Industry 4.0 technologies and actions that manufacturers can take to protect themselves from a cyber attack. It also provides examples of how MEP Centers work with manufacturers to find solutions to their unique cybersecurity challenges. It's important for firms to adopt Industry 4.0 technologies to stay competitive. Upgrading cybersecurity must be integrated into that effort to protect both your business and supply chains. The MEP National Network has the resources to help safeguard information, systems, employees, and product...

National Institute of Standards and Technology - Oct 26, 2023

CESER's Partnerships Support a Secure Clean Energy Transition, as Outlined in the National Cybersecurity Strategy

...The National Cybersecurity Strategy (NCS) established strategic objectives to advance cybersecurity across all missions, stakeholders, and sectors. In short, the NCS calls for a defensible and resilient digital ecosystem to protect our national security, public safety, and economic prosperity. The National Cybersecurity Strategy Implementation Plan (NCSIP) coordinates efforts with all relevant stakeholders across dozens of Federal initiatives that work towards implementing the Strategy's vision. The Department of Energy's (DOE) Office of Cybersecurity, Energy Security, and Emergency Response (CESER) plays an important role in implementing the NCS, ultimately enabling the protection of critical energy infrastructure, increasing our collective security, and bolstering our systemic resilience. The NCS highlighted ETAC as a key component of national cyber information sharing efforts, to include CISA's Joint Cyber Defense Collaborative, which aims to enable timely, actionable, and relevant threat and vulnerability information sharing to improve the security and resilience of critical infrastructure. The NCSIP is a living document and will be updated regularly, so the ways DOE and CESER will support the NCS will continue to evolve...

Department of Energy - Oct 26, 2023

CYBER HYGIENE | Securing Airmen to help secure our world

...The Cybersecurity and Infrastructure Security Agency, or CISA, is working to ensure a secure and resilient critical infrastructure for the American people. CISA's physical and cybersecurity advisors work in lockstep with our Department of Defense counterparts every day in a whole-of-government approach to securing our Nation's critical infrastructure. CISA unveiled the "Secure Our World" program, where we plan to help change bad cybersecurity behaviors and begin to shift the needle towards a more cyber-secure population. At CISA, we often tell anyone who will listen that Cybersecurity is a "team sport." ...

Air Education and Training Command - Oct 27, 2023

A "Test of Their Moxie": CyberForce Competition® Team Mentors Share Impact and Experiences

...The Department of Energy's (DOE) 2023 CyberForce Competition® is right around the corner on November 4. This hands-on, team-based cybersecurity competition offers college students from across the country the opportunity to put their skills to the test to defend critical energy infrastructure in real-world cyber attack scenarios. CyberForce Competition is sponsored by DOE's Office of Cybersecurity, Energy Security, and Emergency Response (CESER) and led by Argonne National Laboratory. The CyberForce Competition is part of DOE's workforce development efforts, supporting the Biden-Harris Administration's priority to invest in our future cybersecurity professionals. The CyberForce Competition helps prepare students to take on the challenges of tomorrow's cyber attacks...

Department of Energy - Oct 30, 2023

5G, Wireless Spectrum, Networking & Communications

NASA-ISRO Radar Mission to Provide Dynamic View of Forests, Wetlands

...Once it launches in early 2024, the NISAR radar satellite mission will offer detailed insights into two types of ecosystems – forests and wetlands – vital to naturally regulating the greenhouse gases in the atmosphere that are driving global climate change. NISAR is a joint mission by NASA and ISRO (Indian Space Research Organisation), and when in orbit, its sophisticated radar systems will scan nearly all of Earth's land and ice surfaces twice every 12 days. The data it collects will help researchers understand two key functions of both ecosystem types: the capture and the release of carbon. NISAR's data will improve our understanding of how the loss of forests around the world influences the carbon cycle and contributes to global warming. The signal from NISAR's L-band radar will penetrate the leaves and branches of forest canopies, bouncing off the tree trunks and the ground below. By analyzing the signal that reflects back, researchers will be able to estimate the density of forest cover in an area as small as a soccer field...

National Aeronautics and Space Administration - Oct 27, 2023

One Byte at a Time: NTIA's Approach For a Trustworthy and Secure Internet

...NTIA is tackling one of the newest cybersecurity challenges, artificial intelligence. This spring, we embarked on a new initiative to gather input and inform policymakers and other stakeholders about what steps might help to ensure these systems are safe, effective, responsible, and lawful. As the President's principal advisor on information technology and telecommunications matters, NTIA will help develop the policies necessary to verify that AI systems work as they claim – and without causing harm. Our initiative will help build an ecosystem of AI audits, assessments, certifications, and other policies to support AI system assurance and create earned trust...

National Telecommunications and Information Administration - Oct 26, 2023

NASA funds UC Irvine-led mission to record changes in Antarctica's ice sheet using data from upcoming and existing international satellite missions

...NASA has awarded a \$2.8 million grant to researchers at the University of California, Irvine for a five-year project to survey Antarctica's ice sheet. The newly funded endeavor aims to provide the most detailed record yet of the condition of glaciers on the vast southern continent. Primarily using data from the upcoming NISAR satellite mission, the UCI glaciologists will also incorporate observations from the European Space Agency's Copernicus Sentinel-1 satellites, the U.S./Finnish ICEYE constellation, the Canadian RCM constellation and Japan's Advanced Land Observing Satellite mission. One of the most significant outcomes from the Making Earth System Data Records for Use in Research Environments program was an advanced topographical tool called BedMachine Antarctica...

UCI News - Oct 26, 2023

Microelectronics

Increasing Transparency in Critical Materials Price, Supply, and Demand Forecasts

...Critical materials such as base metals (e.g., nickel, lithium, and magnesium), rare earth metals, and other minerals (e.g., cobalt and germanium) are vital to Department of Defense (DOD) operations and U.S. national security. They are also essential to modern technology, for example, germanium and tin are central to advanced semiconductor manufacturing. In partnership with the United States Geological Survey (USGS), the DARPA Open Price Exploration for National Security (OPEN) program aims to enhance supply chain resilience and national security by spurring the development of technology to increase transparency in critical commodity pricing and supply, demand, and capacity forecasting. OPEN seeks to analyze commercially and publicly available information on fundamental and observable input costs to construct transparent structural price predictions, and to use advances in time series forecasting, economic modeling, and machine learning to create accurate and precise supply and demand forecasts. An OPEN Proposers Day is scheduled for Nov. 13, 2023, to provide information to potential proposers on the objectives of the OPEN program...

DARPA - Oct 25, 2023

How microelectronics will take computing to new heights

...In a future driven by data and artificial intelligence (AI), even the most “micro” of microelectronics will need to shrink further — and use less energy to boot. Scientists at the U.S. Department of Energy’s (DOE) Argonne National Laboratory are inventing the next generation of these computing building blocks. The upcoming Aurora exascale supercomputer at the Argonne Leadership Computing Facility (ALCF), a DOE Office of Science user facility, runs on tens of thousands of state-of-the-art processors that each pack 100 billion transistors into less than 4 square inches. The Aurora processors’ power will enable more than 2 quintillion calculations per second. Those calculations will fuel the discoveries we need to generate clean energy, fight viruses, build more efficient engines, explore space — and, of course, explore the next frontier of microelectronics, among other endeavors. As scientists explore new materials, configurations and manufacturing techniques for microelectronics, the Advanced Photon Source (APS), a DOE Office of Science user facility, will be key. With an upgrade that is currently in progress, the APS’s X-ray beams will become up to 500 times brighter. The increased brightness will also lend itself to smaller spot sizes that can zero in on the smallest of features in a material or semiconductor device. The powerful new tools at Argonne will contribute to a sort of flywheel effect. The APS and other observational tools will generate more data than ever. That data will feed the innovation of the very processors that will analyze it at the Aurora supercomputer and beyond...

Argonne National Laboratory - Oct 30, 2023

NSF funds engineering faculty-researcher to decrease computer chip vulnerabilities

...Michael Zuzak, a faculty-researcher at Rochester Institute of Technology, is one of a growing field of engineers looking to improve computer chip security during manufacturing. Zuzak’s work to secure the entire chip could prevent piracy and help protect intellectual property. Zuzak received a two-year National Science Foundation grant to use the developmental practice of logic obfuscation to enable system-wide security during the manufacturing and testing of integrated circuits, also referred to as computer chips. Zuzak is developing AI-driven algorithms to perform security assessments of the physical design that are resistant to reverse engineering attacks. Logic obfuscation makes some portion of the design dependent on a withheld value, a number or secret key. Making the design dependent on that key would allow the manufacturer to produce the computer chip, but not have information about its functionality. Already Zuzak and his team have developed mathematical models for computer chips capable of predicting the effectiveness of security solutions with over 95 percent accuracy. These models can be customized for new chip design after sampling less than 1 percent of possible security configurations...

Rochester Institute of Technology - Oct 26, 2023

Climate Change / Green Energy & IT

FACT SHEET: Biden-Harris Administration Announces Historic Investment to Bolster Nation’s Electric Grid Infrastructure, Cut Energy Costs for Families, and Create Good-paying Jobs

...Through a historic investment in America’s electric grid, the Biden-Harris Administration is catalyzing development of thousands of miles of new and upgraded transmission lines that will reduce electricity costs for hardworking families and small businesses, prevent power outages in the face of extreme weather made worse by the climate crisis, strengthen America’s energy security, create good-paying jobs, and drive innovation and deployment of renewable energy technologies. The Department of Energy announced a new \$1.3 billion commitment in three transmission lines crossing six states – Arizona, Nevada, New Hampshire, New Mexico, Utah, and Vermont – to deliver affordable, reliable power to households across the country. This announcement comes on the heels of the nearly \$3.5 billion investment announced last week by the Department of Energy to strengthen grid reliability and resilience across 44 states. By investing in projects that move overhead power lines that are threatened by high winds or heavy snow, removing hazard trees, and making technology-based upgrades and improvements, utilities can better predict when and where there are high-risk conditions for wildfires, better detect wildfires earlier on, and reduce the need to proactively shut off power in regions that are at-risk for wildfires...

The White House - Oct 30, 2023

DOE Announces \$36 Million To Advance Marine Carbon Dioxide Removal Techniques and Slash Harmful Greenhouse Gas Pollution

...The U.S. Department of Energy (DOE) today announced \$36 million for 11 projects across 8 states to accelerate the development of marine carbon dioxide removal (mCDR) capture and storage technologies. Funded through DOE’s Sensing Exports of Anthropogenic Carbon through Ocean Observation (SEA-CO2) program, these projects will support novel efforts to measure, report, and validate mCDR and identify cost-effective and energy efficient carbon removal solutions. mCDR techniques take advantage of the ocean’s natural carbon capture and storage processes and, together with other carbon dioxide removal methods, have the potential to mitigate and remove hundreds of millions of tons of harmful carbon dioxide emissions per year. mCDR takes place across large surfaces or volumes of the ocean over comparatively long periods of time. Small and large businesses, national labs, and universities will play a critical role in creating new and appropriately scaled sensors and models that will quantify the effectiveness of mCDR techniques. Earlier this month, the White House Office of Science and Technology Policy (OSTP) announced a new Fast-Track Action Committee on Marine Carbon Dioxide Removal. Under the authority of OSTP’s National Science and Technology Council, the Committee will evaluate the merits of and concerns about different types of mCDR and

shape relevant policy and research on safe and effective marine carbon dioxide removal and carbon sequestration...
Department of Energy - Oct 26, 2023

Biden-Harris Administration Approves Largest Offshore Wind Project in the Nation

...The Biden-Harris administration announced its approval of the Coastal Virginia Offshore Wind (CVOW) commercial project – the fifth approval of a commercial-scale, offshore wind energy project under President Biden’s leadership. This announcement supports the Administration’s goal of deploying 30 gigawatts of offshore wind energy capacity by 2030. The CVOW commercial project is the largest yet, and would provide about 2,600 megawatts of clean, reliable offshore wind energy, capable of powering over 900,000 homes...

U.S. Department of the Interior - Oct 31, 2023

Digital Health

A Proclamation on National Lung Cancer Awareness Month, 2023

...During National Lung Cancer Awareness Month, we honor the resilient people who have faced this diagnosis, the loved ones who rally to their side, and the medical professionals who do all they can to help patients survive and heal. We recommit to ending cancer as we know it by investing in new, affordable ways to prevent, detect, and treat this deadly disease. The Administration secured \$2.5 billion in funding for the Advanced Research Projects Agency for Health (ARPA-H). The scientists, innovators, and public health professionals funded by ARPA-H are driving breakthroughs in preventing, detecting, and treating cancer and other deadly diseases...

The White House - Oct 31, 2023

Patient Preferences with Social Needs Information Sharing

...While studies show that patients are generally comfortable with social needs screening, little is known about patients’ comfort or preferences around how social needs data are captured and shared with other providers and service organizations to inform treatment and care coordination. Understanding individuals’ comfort with the sharing of their social needs data has implications for patient preferences related to the capture and exchange of potentially patient-sensitive information, particularly with ongoing efforts to increase the collection and use of data on patients’ health related social needs. In recent focus groups of patients, participants expressed a desire for most of their health information to be shareable between providers but indicated sensitivity around data points relating to substance abuse, behavioral and mental health, and social needs. New data from the 2022 Health Information National Trends Survey (HINTS 6) offers a nationally representative assessment of and an important perspective on individuals’ comfort with providers’ use of data on patients’ health-related social needs. ONC’s analysis of HINTS data shows that while a majority of people —about 60% nationally— were comfortable with their health care providers sharing information about their social needs with other providers for treatment purposes, 4 in 10 individuals nationwide expressed some level of unease with this type of information sharing...

Health IT - Oct 26, 2023

NIH funded research is making genetic prediction models more inclusive

...MIT researchers have created a new model that takes into account genetic information from people from a wider diversity of genetic ancestries across the world. Using this model, they showed that they could increase the accuracy of genetics-based predictions for a variety of traits, especially for people from populations that have been traditionally underrepresented in genetic studies. The researchers hope their more inclusive modeling approach could help improve health outcomes for a wider range of people and promote health equity by spreading the benefits of genomic sequencing more widely across the globe. In creating their new model, the MIT team used computational and statistical techniques that enabled them to study each individual’s unique genetic profile instead of grouping individuals by population. The research was funded by the National Institutes of Health.

MIT News - Oct 26, 2023

Other IT Related

NIST Team Develops Highest-Resolution Single-Photon Superconducting Camera

...Researchers at the National Institute of Standards and Technology (NIST) and their colleagues have built a superconducting camera containing 400,000 pixels — 400 times more than any other device of its type. Superconducting cameras allow scientists to capture astronomical images under extremely low-light-level conditions. Creating a

superconducting camera with a much greater number of pixels has posed a serious challenge because it would become all but impossible to connect every single chilled pixel among many thousands to its own readout wire. The challenge stems from the fact that each of the camera's superconducting components must be cooled to ultralow temperatures to function properly, and individually connecting every pixel among hundreds of thousands to the cooling system would be virtually impossible. NIST researchers and their collaborators at NASA's Jet Propulsion Laboratory in Pasadena, California, and the University of Colorado Boulder overcame that obstacle by combining the signals from many pixels onto just a few room-temperature readout wires...

National Institute of Standards and Technology - Oct 25, 2023

NASA Is Locating Ice on Mars With This New Map

...The need to look for subsurface ice arises because liquid water isn't stable on the Martian surface: The atmosphere is so thin that water immediately vaporizes. There's plenty of ice at the Martian poles – mostly made of water, although carbon dioxide, or dry ice, can be found as well – but those regions are too cold for astronauts (or robots). The NASA-funded Subsurface Water Ice Mapping project comes in. SWIM, as it's known, recently released its fourth set of maps. For this latest SWIM map, scientists relied on two higher-resolution cameras aboard MRO. Context Camera data was used to further refine the northern hemisphere maps and, for the first time, HiRISE (High-Resolution Imaging Science Experiment) data was incorporated to provide the most detailed perspective of the ice's boundary line as close to the equator as possible. SWIM's scientists hope the project will serve as a foundation for a proposed Mars Ice Mapper mission – an orbiter that would be equipped with a powerful radar custom-designed to search for near-surface ice beyond where HiRISE has confirmed its presence...

National Aeronautics and Space Administration - Oct 27, 2023

SMU prof and NASA collaborators awarded patent for Alexa-like virtual research assistant

...NASA sensors scattered across land, sea, and space have collected hundreds of terabytes of Earth science data over the past four decades. Jia Zhang and NASA collaborators developed an intelligent, virtual, personalized assistant for Earth science research. MATA, which is the Sanskrit name for the Earth, provides conversational computing that allows users to type or verbally ask questions through a computer or mobile phone. The technology is specifically designed for searches that are geospatial and time-aware. Predicting natural disasters and creating climate models involve processing an enormous amount of data. Zhang's work is dedicated to developing intelligent systems that help speed up processing using machine learning. MATA is designed to pull stored data from dozens of satellites related to hurricanes, floods, dust storms, heat waves, power outages, and more...

SMU Magazine - Oct 25, 2023

NSF awards up to \$21.4M for design of next-gen telescopes to capture earliest moments of universe

...The National Science Foundation has awarded \$3.7 million to the University of Chicago for the first year of a grant that may provide up to \$21.4 million for the final designs for a next-generation set of telescopes to map the light from the earliest moments of the universe—the Cosmic Microwave Background. They will build telescopes and infrastructure in both Antarctica and Chile to search for what are known as “primordial” gravitational waves—the vibrations from the Big Bang itself. The entire project, known as CMB-S4, is proposed to be jointly funded by the National Science Foundation and the U.S. Department of Energy. CMB-S4 would involve telescopes in two locations: a large telescope and nine smaller ones in Antarctica, and two large telescopes in the mountains of Chile. The telescopes in Chile would conduct a wide survey of the sky, trying to capture a fuller and more precise picture of the cosmic microwave background—and through it, helping us to understand the evolution and distribution of matter in the universe. The telescopes at NSF's South Pole Station would take a very deep, sustained look at a smaller part of the sky. The South Pole is the only location that allows a telescope to look at one place in the sky continuously, because it's at the pole where the rest of the Earth spins around...

UChicago News - Oct 26, 2023

STEM / Workforce & IT

Latest Issue of NASA's First Woman Graphic Novel Series

...Fictional astronaut Callie Rodriguez continues exploring space as the first woman to walk on the Moon in a new issue of the First Woman graphic novel series. Now available digitally in English and Spanish, First Woman: Expanding Our Universe follows Callie and her crewmates as they work together to explore the unknown, make scientific discoveries, and accomplish their mission objectives. Through the First Woman series, NASA is inspiring the next generation of explorers – the Artemis Generation – as it works to land the first woman and first person of color on the Moon under the Artemis program. The website and immersive app allow audiences to explore a new virtual 3D environment, technologies, and objects related to lunar exploration. Fans also can explore updated First Woman content, including videos, interactive games, and other materials related to ongoing and future NASA missions.

National Aeronautics and Space Administration - Oct 29, 2023

Lucy - NASA Science

...The Lucy mission is named for a fossilized skeleton of a human ancestor, which was named for the Beatles song "Lucy in the Sky with Diamonds." Lucy will explore a record-breaking number of asteroids, flying by two asteroids in the solar system's main asteroid belt, and by eight Trojan asteroids that share an orbit around the Sun with Jupiter. Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Episode 1: Launch...
science.nasa.gov - Oct 29, 2023

USDA Invests Funds to Support Hispanic-serving Institutions, Students on the Road to Educational Success

...U.S. Department of Agriculture Deputy Secretary Xochitl Torres Small today announced an investment of \$15.5 million in USDA's Hispanic-serving Institutions (HSI) Education Grants Program. The Hispanic-serving Institutions Education Grants Program, administered by USDA's National Institute of Food and Agriculture (NIFA), promotes and strengthens the ability of HSIs to carry out higher education programs in food and agricultural sciences. NIFA awarded 21 HSIs funding across 25 funded projects. Examples include: * The "Future Leaders in Bio-Derived Organic Energy Storage Materials" project at the City College of New York will mentor and train a cohort of Hispanic students in the field of bioderived organic materials as sustainable battery components. * The "Skills Development in Synthetic Biology for Climate Smart and Sustainable Agriculture" project at the University of Houston will introduce underrepresented students to career opportunities in agriculture by developing new courses in plant biotechnology and synthetic biology...
USDA APHIS - Oct 27, 2023

CSU Pueblo Cyber Security Program garners National Science Foundation funding and creates pathways for students

...The Center for Cyber Security Education and Research (CCSER) is now in the fourth year of its five-year \$2.5 million Project PUENTE (Partnerships in Undergraduate Education for New and Transferring Estudiantes) National Science Foundation (NSF) grant. The project is funded by the NSF as an initiative to support Hispanic Serving Institutions create pathways for underrepresented minority student groups and females in the Science Technology Engineering and Mathematics (STEM) disciplines. Project PUENTE will focus on the technology aspect of STEM with plans to use cyber security as a gateway to attract and retain students pursuing a bachelor's degree and careers in STEM. The CSU Pueblo Cyber Security Program received an additional \$100,000 in support from the National Science Foundation (NSF) to support Security Education Training Awareness (SETA)...
CSU-Pueblo: Colorado State University-Pueblo - Oct 27, 2023

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 - Sep 21, 2023

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!
The Networking and Information Technology Research and Development (NITRD) Program - Sep 14, 2023

Upcoming Conferences / Workshops / Webinars

Webinar: Workforce Progress Nov 7th

...CHIPS for America is a suite of federal programs to strengthen and revitalize the U.S. position in semiconductor manufacturing and research and development. This webinar will provide an update on CHIPS for America initiatives on workforce development, spanning both our manufacturing incentives and research and development programs. November 7, 2023 3:30pm EST Virtual
National Institute of Standards and Technology - Oct 27, 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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