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!

NITRD News

ANNOUNCEMENT OF NEW NITRD NCO DIRECTOR – DR. CRAIG SCHLENOFF

...The Networking and Information Technology Research and Development (NITRD) National Coordination Office (NCO) is pleased to announce the appointment of Dr. Craig Schlenoff as its new Director. Dr. Schlenoff joins the NITRD NCO from the National Institute of Standards and Technology (NIST), where he served as the Group Leader of the Cognition and Collaboration Systems Group and the Program Manager of the Measurement Science for Manufacturing Robotics Program in the Intelligent Systems Division. Dr. Schlenoff succeeds Kamie Roberts and will become the 15th Director for the NITRD Program...

NITRD - Oct 16, 2023

Cybersecurity Awareness Month

Cybersecurity Awareness Month: Secure Our World

... Since 2004, the President of the United States and Congress have declared the month of October to be Cybersecurity Awareness Month, a dedicated month for the public and private sectors to work together to raise awareness about the importance of cybersecurity. In recognition of the 20th Cybersecurity Awareness Month, CyberSecurity & Infrastructure Security Agency announced a new enduring cybersecurity awareness program, Secure Our World. Secure Our World reflects a new enduring message to be integrated across the awareness campaigns and programs and encourages everyone to take steps each day to protect themselves when online or using connected devices. The Director of Signal and Communications for U.S. Army Garrison Italy, says there are four main ways for families and individuals to keep safe...
920th Rescue Wing - Oct 14, 2023

2023 #CyberCareerChat

...Join us on Twitter/X by following the @NISTCyber Twitter handle for an engaging chat that will answer common questions, provide tips and resources from experts, raise awareness, and increase public engagement about cybersecurity careers. Use the unifying hashtags #CyberCareerChat, #CyberCareerWeek, #MyCyberJob, or #ChooseCyber to post and follow along.
National Institute of Standards and Technology - Oct 11, 2023

Cracking the code on Cybersecurity Awareness: 173rd Communications Flight keeps Kingsley connected and secured

...The month of October brings a new fiscal year, and a new theme for Cybersecurity Awareness Month: Cybersecurity—Every Airman, Every Guardian – Mission Possible! The U.S. Air Force places an emphasis on protecting the military's cyberspace, as well as seizing the opportunity to modernize for our digital future. Consider the 173rd CF as the cyber security forces that are focused on protecting the integrity and confidentiality of military systems by preventing digital attacks. Patching is one of the many cyber defenses that the team uses to resolve functionality issues, improve security, and optimize performance of computer systems around the base...
Air Force Link - Oct 17, 2023

HPC

Argonne's Aurora supercomputer set to supercharge materials discovery

...The U.S. Department of Energy's (DOE) Argonne National Laboratory is building one of the nation's first exascale systems, Aurora. To prepare codes for the architecture and scale of the new supercomputer, 15 research teams are taking part in the Aurora Early Science Program (ESP) through the Argonne Leadership Computing Facility (ALCF). Aurora is expected to be one of the world's fastest supercomputers when it is deployed for science. QMCPACK is an open-source code that uses the Quantum Monte Carlo (QMC) method to predict how electrons interact with one another for a wide variety of materials. DOE's Exascale Computing Project's QMCPACK is dedicated to preparing the code for the nation's larger exascale ecosystem...
Argonne National Laboratory - Oct 16, 2023

DOE's NNSA university-based research program houses a supercomputer ranked one of the world's most powerful

...The University of Rochester's Laboratory for Laser Energetics is one of only several facilities in the world where scientists are studying laser-driven inertial confinement fusion (ICF) for national security purposes and to harvest energy from nuclear fusion. Fusion, which powers the sun, has long been a component of maintaining the nuclear deterrent and is viewed as an ideal potential energy-production mechanism. A new supercomputer housed at the University will make it possible for researchers to simulate complex high-energy-density phenomena in ICF in three dimensions with unprecedented details. In addition to direct-physics modeling, the supercomputer, dubbed "Conesus" also enables using artificial intelligence and machine-learning tools to advance progress in high-energy-density (HED) science. As the largest US Department of Energy (DOE) National Nuclear Security Administration (NNSA) university-based research program in the nation, the University and LLE are "the perfect venue for the new system. The Conesus supercomputer has already received several impressive distinctions, earning a place on the most recent TOP500 list of the most powerful computer systems in the world and the GREEN500 list, denoting the world's most energy-efficient supercomputers. The machine was manufactured by Intel and developed in partnership with Dell Technologies and Lawrence Livermore National Laboratories (LLNL)...
University of Rochester School of Nursing - Oct 13, 2023

NSF awards grant for powerful new GPU computing resources

...Faculty and student researchers at WVU and any other university or college in West Virginia can now request access to the new high performance computing cluster called Dolly Sods. This graphic processing unit cluster is ideal for supporting specific computational tasks requiring extra speed and power, such as machine learning, artificial

intelligence, molecular dynamics for materials and drug discovery, image and video processing, and training neural networks. This high-performance computing cluster was established with the support of an MRI grant awarded by the National Science Foundation...
WVU - Oct 12, 2023

Artificial Intelligence / Machine Learning

UTA receives a USDA grant for database to track carbon in soil

...A multidisciplinary team of researchers from The University of Texas at Arlington has received a $450,000 grant from the U.S. Department of Agriculture (USDA) to create a soil carbon data management platform as part of the farm production and conservation soil carbon data monitoring network. This project from the USDA will allow the researchers to develop a consistent data management platform for soil carbon data as part of the Farm Production and Conservation Soil Carbon Monitoring Network. They plan to use UTA's artificial intelligence and machine learning expertise to develop tools to identify environmental factors affecting forage or crop production. The end product will allow farmers to maximize productivity and ecosystem benefits in diverse environments...
The University of Texas at Arlington - Oct 12, 2023

NSF-Funded UMD Researchers Are Using Machine Learning to Create a Bio-Nose That Smells for Real

...A UMD research team's ambitious "bio-nose" project aims to create a portable, biologically based device capable of identifying odors in the built environment, backed by a four-year, $2 million grant from the National Science Foundation. Abhinav Shrivastava, at the University of Maryland Institute for Advanced Computer Studies. will develop the complex computational algorithms needed to analyze the concentration response curves to a panel of odorants, which are then compared to the known responses of the corresponding olfactory sensory neurons. He will also develop powerful machine learning tools to discover how a collection of cells reacts when exposed to various odors, a process needed to identify the source. There are applications in food, wine, perfumes, medical diagnostics, homeland security, agriculture, mold detection and more...
UMIACS - Oct 11, 2023

MATRIX AI Consortium receives $2.8M NSF grant to establish neuro-inspired AI partner institute

...The National Science Foundation (NSF) awarded $2.8 million to researchers from MATRIX: The UTSA AI Consortium for Human Well-Being to bolster research capacity in the field of neuro-inspired artificial intelligence. The funding will establish the ExpandAI Partner Institute, which is a collaboration between UTSA and the AI Institute for Edge Computing Leveraging Next-generation Networks (ATHENA). Researchers will develop AI technologies that prioritize societal impact and the cultivation of the next generation of AI educators and workforce talent. Rooted in inspiration drawn from the human brain, researchers will craft computational models and engineer AI systems for edge devices...
The University of Texas at San Antonio - Oct 17, 2023

Robotics / Autonomous Vehicles

A New Take on Modeling & Simulation for Improved Autonomy

...Multiple factors limit the potential of modern autonomous systems. Unlike commercial autonomous systems, such as warehouse robotics or autonomous vehicles operating in a controlled environment using geofencing, military systems have far more unknown variables. Contrary to the conventional wisdom of high-fidelity simulation, DARPA experts theorize that learning and transferring autonomy across diverse, low-fidelity simulations leveraging their shared semantics can lead to a more rapid transfer of autonomy from simulation to reality. The Transfer from Imprecise and Abstract Models to Autonomous Technologies program seeks proposals that put this theory to the test. The program is organized into two phases. Phase 1 is 18 months and will develop sim-to-sim autonomy transfer techniques and novel methods for automatically developing or refining low-fidelity models and simulations to be used for transfer. Phase 2 is 18 months and will develop sim-to-real autonomy transfer techniques and novel methods for automatically developing or refining low-fidelity models and simulations to be used for transfer...
DARPA - Oct 17, 2023

USDA Funds Research for Drones to More Effectively Monitoring Harmful Algae Blooms

...Toxic blue-green algae blooms, known as cyanobacteria, can carry potential health risks for adults, children and pets, but testing each suspicious body of water can be expensive and time-consuming. Researchers at the University of New Hampshire have developed a promising alternative by using unmanned aerial systems (UAS), or drones, equipped with special sensors to help identify the harmful blooms faster and more efficiently. With so many bodies of water across the region, testing water samples can get

expensive but drones offer a faster, simpler and safer alternative, with very little exposure to the toxin for those performing the tests. With so many bodies of water across the region, testing water samples can get expensive but drones offer a faster, simpler and safer alternative, with very little exposure to the toxin for those performing the tests. They used UAS equipped with a multispectral sensor to capture imagery in various wavelengths of the electromagnetic spectrum, which allowed for the accurate detection, identification and quantification of certain parts of the aquatic ecosystem, like the blue-green and green algae. They flew the drone over six bodies of water in southern New Hampshire. The research was funded by the USDA National Institute of Food and Agriculture...
UNH - Oct 12, 2023

Harmonizing with nature: Clemson University and partners share a DARPA award to solve a maritime challenge
...The Defense Advanced Research Projects Agency (DARPA) is providing up to $13.6 million over four years to Clemson University, Duke University, the University of Essex, the University of Copenhagen and Pompeu Fabra University to solve an age-old maritime challenge. Biofouling reduces vessels' speed and efficiency and can result in higher fuel consumption and maintenance costs, but the antifouling coatings used are environmentally harmful, costly and often ineffective. The team is working on a more sustainable alternative that would employ natural marine microbes as "building blocks" to form smooth, stable biofilms that reduce drag. The project's focus is unmanned underwater vehicles (UUVs). Biofouling is a particular problem for UUVs because they often run on battery power, and the drag can reduce the amount of time they can be operated. One of the key pillars of the project is a scalable testbed built in the Rhodes Engineering Research Center at Clemson. The testbed mimics a UUV's operational environment, including such factors as temperature, shear forces and pressure. The team is also pioneering new research techniques. They are using optical coherence tomography (OCT) to view biofilms in real time and then go a step further, integrating OCT with superspectral imaging (SSI). Researchers call their technique OCTaSSI and said they expect it will be transformative in making predictions about biofilms...
Clemson University - Oct 11, 2023

Quantum

Argonne to receive new funding to develop quantum networks
...Quantum networks hold enormous potential for groundbreaking advances in many areas of science and technology. The U.S. Department of Energy (DOE) has announced that three collaborative projects in quantum networking will receive $24 million for up to three years. The InterQnet project will address multiple challenges with scaling up quantum networks from the current metropolitan scale to much longer distances and more complex architectures. To that end, Argonne is collaborating with DOE's Fermi National Accelerator Laboratory (Fermilab), Northwestern University, the University of Chicago and the University of Illinois Urbana-Champaign. InterQnet will be showcasing quantum communication across five buildings on the Argonne campus with multiple distinct quantum platforms and an early-stage quantum repeater. Each platform will use a different type of quantum bit (qubit). Argonne researchers previously collaborated in the development of four types of qubits: electrons, ytterbium atoms, charged erbium atoms (ions) and microwave circuits. A significant milestone would be to demonstrate the Argonne quantum network connecting these distinct qubit platforms. One of them would serve as a quantum repeater, an essential network element to extend the communication distance. InterQnet will also leverage various existing QIS hardware and software elements already in place...
Argonne National Laboratory - Oct 16, 2023

DOE/NSF/ARO/DARPA support research that may lead to self-correcting quantum computers
...A Harvard quantum computing platform's has the potential to solve the longstanding problem known as quantum error correction. The Harvard platform is built on an array of very cold, laser-trapped rubidium atoms. The team's chief innovation is configuring their "neutral atom array" to be able to dynamically change its layout by moving and connecting atoms. Running a complicated algorithm on a quantum computer requires many gates. However, these gate operations are notoriously error-prone, and a buildup of errors renders the algorithm useless. The team reports near-flawless performance of its two-qubit entangling gates with extremely low error rates. Harvard's approach has major advantages over these competitors due to its large system sizes, efficient qubit control, and ability to dynamically reconfigure the layout of atoms. ... The research was supported by the U.S. Department of Energy's Quantum Systems Accelerator Center; the Center for Ultracold Atoms; the National Science Foundation; the Army Research Office Multidisciplinary University Research Initiative; and the DARPA Optimization with Noisy Intermediate-Scale Quantum Devices program.
Harvard Gazette - Oct 11, 2023

Cybersecurity / Privacy

NSA and U.S. Agencies Issue Best Practices for Open Source Software in Operational Technology Environments

...The National Security Agency (NSA) is joining U.S. federal partners to release cybersecurity guidance to promote understanding of open source software (OSS) implementation and provide best practices to secure operational technology (OT) and industrial control systems (ICS) environments. OSS is software with an open license for anyone to view, use, study, or modify, and is distributed with its source code. The diverse way in which OSS can be integrated into OT products can make it difficult to know whether particular software modules, and their associated vulnerabilities, are present and/or exploitable. As the integration of OT and Information Technology (IT) networks increases, the critical infrastructure supporting these networks faces greater exposure to cyber threat campaigns. The Cybersecurity Information Sheet (CSI) “Improving Security of Open Source Software in Operational Technology and Industrial Control Systems” offers best practices and recommendations for improving OSS security in OT/ICS environments...
National Security Agency/Central Security Service - Oct 11, 2023

NSA releases a repository of signatures and analytics to secure Operational Technology

...Cyber actors have demonstrated their continued willingness to conduct malicious cyber activity against critical infrastructure. To counter this threat, NSA has released a repository for OT Intrusion Detection Signatures and Analytics to the NSA Cyber GitHub. Known as ELITEWOLF, it can enable defenders of critical infrastructure, defense industrial base, and national security systems to identify and detect potentially malicious cyber activity in their OT environments. NSA recommends that OT critical infrastructure owners and operators implement ELITEWOLF as part of a continuous and vigilant system monitoring program...
National Security Agency/Central Security Service - Oct 13, 2023

Ransomware Vulnerability Warning Pilot updates: Now a One-stop Resource for Known Exploited Vulnerabilities and Misconfigurations Linked to Ransomware

...Many organizations may be unaware that a vulnerability used by ransomware threat actors is present on their network. To help organizations overcome this potential blind spot, the Cybersecurity and Infrastructure Security Agency (CISA) established the Ransomware Vulnerability Warning Pilot (RVWP). Through the RVWP, CISA determines vulnerabilities that are commonly associated with known ransomware exploitation and warns critical infrastructure entities with those vulnerabilities, helping to enable mitigation before a ransomware incident occurs. Now, all organizations have access to this information in our known exploited vulnerabilities (KEV) catalog as we added a column titled, “known to be used in ransomware campaigns.” ...
CISA - Oct 12, 2023

5G, Wireless Spectrum, Networking & Communications

UTSA to contribute to NASA's Pandora global air quality network

...A five-year, $590,017 NASA grant will support an instrument connecting UTSA to a global monitoring network of atmospheric pollution. The project will make UTSA part of the NASA Pandora Project as well as a member of the Pandonia Global Network of stations, which is a joint effort between NASA and the European Space Agency to provide long-term measurements of air quality and atmospheric composition to calibrate satellite sensors. The Pandora Project uses spectroscopy to study ultraviolet and visible wavelengths of light to determine the composition of the atmosphere and its interactions with the Earth’s environment. The ground-based networks are unique with the ability to measure total column and vertical profiles, observing different layers of the atmosphere at once...
The University of Texas at San Antonio - Oct 12, 2023

Microelectronics

Selection Committee Announces Leaders to Operate the CHIPS for America National Semiconductor Technology Center

...An incoming board of trustees will oversee a nonprofit entity that will operate the National Semiconductor Technology Center (NSTC). The NSTC is the core research and development (R&D) component of the Department of Commerce’s CHIPS for America program. The Department of Commerce expects to enter into a funding agreement with the newly formed nonprofit so that it can begin to operate the NSTC. “The members of the board of trustees will help to establish an NSTC that is visionary, agile and responsive to the needs of the semiconductor ecosystem,” said Under Secretary of Commerce for Standards and Technology and National Institute of Standards and Technology (NIST) Director Laurie E. Locascio. The bipartisan CHIPS and Science Act established four research and development programs at the Department of Commerce that are being overseen by the CHIPS Research and Development Office within the National Institute of Standards and Technology (NIST): the National Semiconductor Technology Center, the National Advanced Packaging Manufacturing Program, up to three new Manufacturing USA institutes dedicated to semiconductors, and the CHIPS R&D Metrology Program...

National Institute of Standards and Technology - Oct 11, 2023

$15.3M awarded to California-Pacific-Northwest AI hardware hub by the DOD Microelectronics Commons

...Stanford University, along with the University of California, Berkeley, will lead the California-Pacific-Northwest AI Hardware Microelectronics Commons Hub (Northwest AI Hub), one of eight Microelectronics Commons regional innovation hubs awarded by the U.S. Department of Defense (DOD). The Northwest AI Hub will receive $15.3 million in funding this year, part of a total package of $238 million awarded to all eight innovation hubs across the country. The hub awards are the largest to date under the CHIPS and Science Act...
Stanford University - Oct 13, 2023

NSF awards $2M for Oregon State to lead push toward more-efficient, longer-lasting electrical components

...Researchers in the Oregon State University College of Engineering are part of the National Science Foundation Future of Semiconductors (FuSe) program to explore new ways of developing electrical components that are better able to withstand extreme operating conditions, especially high temperatures. The team will try to find novel, artificial-intelligence-based methods for designing and building long-lasting, high-efficiency electrical components for harsh-environment applications such as high-power radar and the aerospace, automotive and wireless communications industries...
Oregon State University - Oct 11, 2023

NSF funds researchers to develop photonic chips could give drones a lift when GPS is unavailable

...Researchers at University of Rochester are developing photonic chips that could replace the gyroscopes currently used in unmanned aerial vehicles or drones, enabling them to fly where GPS signals are jammed or unavailable. Using a quantum technique called weak value amplification, the scientists aim to provide the same sensitivity level of bulk optical gyroscopes on small, handheld photonic chips, potentially transforming navigation for drones. They received a National Science Foundation grant to develop the chips through 2026. Cardenas says the optical fiber gyroscopes used in the most advanced drones today contain spools of fiber several kilometers long or have limited dynamic range...
University of Rochester School of Nursing - Oct 13, 2023

Climate Change / Green Energy & IT

Biden-Harris Administration Announces Regional Clean Hydrogen Hubs to Drive Clean Manufacturing and Jobs

...Advancing clean hydrogen is essential to achieving the President’s vision of a strong clean energy economy that strengthens energy security, bolsters domestic manufacturing, creates healthier communities, and delivers new jobs and economic opportunities across the nation. The seven selected regional clean hydrogen hubs will catalyze more than $40 billion in private investment and create tens of thousands of good-paying jobs – bringing the total public and private investment in hydrogen hubs to nearly $50 billion. The hubs aim to produce more than three million metric tons of clean hydrogen per year, thereby achieving nearly one third of the 2030 U.S. clean hydrogen production goal. The President announced seven regional clean hydrogen hubs nationwide. In addition to the hubs, the DOE has launched other clean hydrogen programs...
The White House - Oct 13, 2023

Digital Health

Teams Developing Datasets to Support DARPA Triage Challenge

...The Research Infrastructure for Trauma with Medical Observations (RITMO) effort aims to combine large-volume multimodal sensor, intervention, and medical outcome data obtained from trauma patients during the early post-injury period into a single database. By using de-identified patient data, researchers can ensure that patient privacy is protected. Data collected in RITMO will support the DARPA Triage Challenge program to identify novel physiological signatures that could enhance triage decision-making in austere, complex, and mass-casualty settings. Teams led by Dr. Peter Hu at the University of Maryland and Dr. Frank Guyette at the University of Pittsburgh will contribute non-invasive continuous vital signs and medical interventions collected from trauma patients during field care, helicopter transport, trauma center reception, resuscitation, and stabilization...
DARPA - Oct 11, 2023

NIH-supported researchers take a deep dive into the Alzheimer's brain in search of understanding and new targets

...People living with Alzheimer's disease experience a gradual erosion of memory and thinking skills until they can no longer carry out daily activities. Hallmarks of the disease include the buildup of plaques that collect between neurons, accumulations of tau protein inside neurons and weakening of neural connections. NIH-supported researchers recently published a trove of data detailing the molecular drivers of Alzheimer's disease and which cell types in the brain are most likely to be affected. The findings could help researchers pinpoint new targets for Alzheimer's disease treatments. The MIT team generated an atlas of gene activity patterns within the brain's prefrontal cortex, an important area for memory retrieval. The researchers developed a map of the various elements that regulate function within cells in the prefrontal cortex. By cross-referencing epigenomic and gene activity data, the researchers showed changes in many genes with known links to Alzheimer's disease development and risk. The researchers plan to apply artificial intelligence and other analytic tools to learn even more about Alzheimer's disease from this trove of data. This research was supported by NIH grants...
National Institute of Aging - Oct 13, 2023

FDA Establishes New Advisory Committee on Digital Health Technologies

...Digital health is a rapidly evolving, cross-cutting space that spans a wide range of technologies. The U.S. Food and Drug Administration announced the creation of a new Digital Health Advisory Committee to help the agency explore the complex, scientific and technical issues related to digital health technologies (DHTs), such as artificial intelligence/machine learning (AI/ML), augmented reality, virtual reality, digital therapeutics, wearables, remote patient monitoring and software...
FDA - Oct 11, 2023

NIH-funded AI tool can predict viral variants, ID most dangerous, help make vaccines 'future-proof'

...A new artificial intelligence tool named EVEscape, developed by researchers at Harvard Medical School and the University of Oxford can make predictions about new viral variants before they actually emerge. The tool has two elements: A model of evolutionary sequences that predicts changes that can occur to a virus, and detailed biological and structural information about the virus. Together, they allow EVEscape to make predictions about the variants most likely to occur as the virus evolves. The researchers are now using EVEscape to look ahead at SARS-CoV-2 and predict future variants of concern. The researchers first developed EVE, short for evolutionary model of variant effect, in a different context: gene mutations that cause human diseases. The core of EVE is a generative model that learns to predict the functionality of proteins based on large-scale evolutionary data across species. Watching the pandemic unfold, the researchers rebuilt EVE into a new tool called EVEscape for the purpose of predicting viral variants. They took the generative model from EVE — which can predict mutations in viral proteins that won't interfere with the virus's function — and added biological and structural details about the virus, including information about regions most easily targeted by the immune system. The team turned the clock back to January 2020 and asked EVEscape to predict what would happen with SARS-CoV-2. EVEscape predicted which SARS-CoV-2 mutations would occur during the pandemic with accuracy similar to this of experimental approaches that test the virus' ability to bind to antibodies made by the immune system. EVEscape outperformed experimental approaches in predicting which of those mutations would be most prevalent... Funding for the research was provided by the National Institutes of Health.
Harvard Gazette - Oct 11, 2023

NIH/NSF-supported research finds practicing mindfulness with an app may improve children's mental health

...Many studies have found that practicing mindfulness — defined as cultivating an open-minded attention to the present moment — has benefits for children. Children who receive mindfulness training at school have demonstrated improvements in attention and behavior, as well as greater mental health. MIT researchers reported that children who used a mindfulness app at home for 40 days showed improvements in several aspects of mental health, including reductions in stress and negative emotions such as loneliness and fear. They also found that children who showed higher levels of mindfulness were more emotionally resilient to the negative impacts of the Covid-19 pandemic. The researchers measured the children's mindfulness using a standardized assessment that captures their tendency to blame themselves, ruminate on negative thoughts, and suppress their feelings. The researchers then built on that study by exploring whether a remote, app-based intervention could effectively increase mindfulness and improve mental health. One group received mindfulness training through an app created by Inner Explorer, a nonprofit that also develops school-based meditation programs. For comparison purposes, the other two groups were asked to use an app for listening to audiobooks. Children in the mindfulness group showed some improvements that the other groups didn't, including a more significant decrease in stress. They also found that parents in the mindfulness group reported that their children experienced more significant decreases in negative emotions such as anger and sadness. ... The research was funded by the National Institutes of Health and the National Science Foundation.
MIT News - Oct 11, 2023

NSF awards grant to develop novel deep learning technologies for medical image classification

...Deep learning technologies can assist in medical image classification, such as helping identify variations of brain diseases or cancers based on CT scans. However, traditional deep-learning approaches are challenging to interpret and often require significant amounts of annotated data. Dr. Tianbao Yang, at Texas A&M University, received more than $1 million from the National Science Foundation to develop deep learning technologies for medical image classification by leveraging both the images and associated free-text reports of patients for self-supervised learning. Self-supervised learning is a new machine learning model that enables machines to learn from unprecedented, unlabeled data without human supervision. By using self-supervised deep AUC maximization and the database, the algorithm can identify differences and abnormalities with limited or no annotated notes, surpassing this step in the diagnostic process. Self-supervised learning algorithms based on deep AUC maximization are better suited for handling imbalanced

data, a common scenario in the medical domain...
Texas A&M University College of Engineering - Oct 17, 2023

Other IT Related

FACT SHEET: Upgrading the U.S.-Singapore Strategic Technology Partnership
...On the occasion of Singaporean Deputy Prime Minister Lawrence Wong's visit to Washington, D.C., the United States and Singapore launched the U.S.-Singapore Critical and Emerging Technology (CET) Dialogue. The two sides discussed opportunities to bolster research, innovation, and commercial ties to expand the frontiers of scientific knowledge, promote prosperity, and deliver public goods to the Indo-Pacific region, especially ASEAN partners. The United States and Singapore also discussed economic security and technology protection measures to manage risks to national security. The United States and Singapore committed to launch new bilateral initiatives and welcomed enhanced cooperation between our governments, industry, and academia across the following domains: * Artificial Intelligence * Digital Economy * Biotechnology * Climate and Resilient Critical Infrastructure * Quantum Information Science and Technology * Defense Innovation...
The White House - Oct 12, 2023

NSF awards UTA scientists a $300,000 grant to develop domestic sources for rare earth metals
...National Science Foundation awards a multidisciplinary team of researchers from the University of Texas at Arlington a $300,000 grant to improve the supply chain for rare earth metals. Rare earth metals—a set of 17 elements, including praseodymium, terbium, and dysprosium—are critical to the manufacturing of electric vehicle motors, wind turbines, smartphones, computers and satellites. However, only a handful of countries worldwide control the supply of these vital resources. One of the difficulties in gathering the elements comes from the extraction process, which often results in large open pits in the ground that can contaminate the environment and local groundwater...
The University of Texas at Arlington - Oct 11, 2023

STEM / Workforce & IT

Find Unique Workforce Solutions for Your Firm: A New Interactive Map Showcases MEP National Network Workforce Programs, Services and Trainings
...MEP Centers around the country help manufacturers fill gaps and find unique workforce solutions based on each firm's needs. A new interactive map, MEP National Network Workforce Programs, Services and Trainings, showcases these efforts across the country. This map complements a recently published list detailing ways that Centers are helping manufacturers overcome workforce challenges. Here are a few examples of workforce success stories from across the MEP National Network. ... MEP Centers focus their workforce service offerings on each manufacturer's unique challenges. They understand the local manufacturing ecosystem and work with local partners. MEP Centers can help companies solve complex workforce challenges, enabling them to grow their business and expand into new markets. Employees find greater satisfaction in jobs that offer training opportunities leading to better pay and career satisfaction...
National Institute of Standards and Technology - Oct 12, 2023

USGS Funds UW's WyomingView Program that Trains Student Interns in Remote Sensing
...The WyomingView program, funded annually by the U.S. Geological Survey (USGS), trains the next generation of remote-sensing scientists and experts. A group of students worked with the U.S. Forest Service, the Bureau of Land Management (BLM) and other federal and state agencies fighting wildfires before enrolling in Sivanpillai's class. After learning how satellite images can be used for mapping wildfires, some of the students contacted their supervisors and obtained specific information about the wildfires to map the impact on trees and other vegetation. In addition to Wyoming, student interns also have worked on projects in other states, including California, Michigan, Montana, New Mexico, Oregon, Texas and Washington...
University of Wyoming - Oct 13, 2023

NSF/NSA/VA Fund Projects by the NC State University College of Education
...Faculty and researchers at the NC State College of Education were funded $1,787,082 from the National Science Foundation to create curricula for undergraduate students who will become middle and high school mathematics teachers to prepare them to use technology to lead productive mathematics discussions while teaching geometry concepts. Another project, funded by $1,000,000 from the National Science Foundation ExLENT program, will establish a partnership with industry organizations, including Delta

Air Lines, Lexmark and Charity Navigator, to collaborate on the design and implementation of a 40-week externship program to prepare 33 individuals for careers in artificial intelligence. "The Broadening the Use of Learning Analytics in STEM Education Research" project was funded by $497,970 from the National Science Foundation. It aims to broaden the pool of researchers who leverage learning analytics by building upon the existing LASER Institute to refine, expand and repackage current instructional resources. The GenCyberPack: Professional Development for Middle and High School Teachers on Cybersecurity project was funded by the National Security Agency to develop the GenCyber camp to empower middle and high school teachers in North Carolina to teach cybersecurity content in their classrooms. The Tailored Self-Management Education and Support to Reduce Diabetes Distress project was funded by the U.S. Department of Veterans Affairs to assist in the development of a program that will improve self-management in veterans with diabetes...
College of Education | NC State University - Oct 12, 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 20, 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 13, 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