FEDERAL AGENCY FUNDING OPPORTUNITIES	HPC	ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	ROBOTICS / AUTONOMOUS VEHICLES	CYBERSECURITY / PRIVACY	5G, WIRELESS SPECTRUM, NETWORKING & COMMUNICATIONS	ADVANCED MANUFACTURING	MICROELECTRONICS	CLIMATE CHANGE / GREEN ENERGY & IT	DIGITAL HEALTH	OTHER IT RELATED	STEM / WORKFORCE & IT	STEM / WORKFORCE RESOURCES & OPPORTUNITIES

NITRD News Brief

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

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

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

Federal Agency Funding Opportunities

DARPA Seeks Revolutionary Ideas from Early Career Researchers at US Academic Institutions

...Researchers in academia and from equivalent positions at non-profit research institutions may submit executive summaries and proposals to almost two dozen new technical topics recently released in DARPA's latest Young Faculty Award (YFA) research announcement. The Young Faculty Award (YFA) program aims to identify and engage rising academics in early-career research positions — particularly those without prior DARPA funding — and expose them to Department of Defense (DOD) needs and DARPA's mission to create and prevent technological surprise. The YFA program provides high-impact funding to researchers at U.S. institutions early in their careers to advance innovative research enabling transformative DOD capabilities. In addition to the YFA program, DARPA has opportunities for early-career researchers to participate in the DARPA Innovation Fellowship and periodically, the DARPA Risers program...

DARPA - Nov 8, 2023

HPC

INCITE program awards supercomputing time to 75 high-impact projects

...The Department of Energy's Office of Science has allocated supercomputer access to a record-breaking 75 computational science projects for 2024 through its Innovative and Novel Computational Impact on Theory and Experiment, or INCITE, program. DOE is awarding 60% of the available time on the leadership-class supercomputers at DOE's Argonne and Oak Ridge National Laboratories to accelerate discovery and innovation. The projects will support a broad range of high-impact, computationally intensive research campaigns in a broad array of science, engineering and computer science domains. Open to any researcher or research organization in the world with a computationally intensive project, INCITE's application process is highly competitive. Over a four-month period, INCITE proposals are assessed by peer-review panels composed of international experts, with each panel representing a different scientific discipline. The proposals are also evaluated on a technical level by each computing facility for computational readiness and the scalability of the project's code and algorithms...
Oak Ridge National Laboratory - Nov 13, 2023

SBU Celebrates Upgraded $1.6M Seawulf Computational Cluster Funded by the National Science Foundation

...Stony Brook's SeaWulf computational cluster has been upgraded with a new high-performance computing (HPC) system that introduces a significant improvement in memory bandwidth, resulting in applications running 2-4x faster. The SeaWulf $1.6 million HPC system uses Hewlett Packard Enterprise (HPE) ProLiant DL360 Gen11 servers and Intel Xeon CPU Max series processors, which became available for the first time earlier this year. SeaWulf is the first academic deployment worldwide of the Intel Sapphire Rapids processors with high-bandwidth memory (HBM) and Infiniband NDR networking. Currently, 43 departments are using SeaWulf, with nearly 2,500 overall users and 436 total projects. And it is not just scientists and mathematicians using SeaWulf. Jason Jones, professor in the Department of Sociology and the Institute for Advanced Computational Science, studies the language individuals use to describe themselves. "I use Seawulf to conduct this research "at scale" — meaning with data from millions of individuals across dozens of nations," said Jones. Professor Heather Lynch in the Department of Ecology and Evolution uses satellite imagery collected from drone to count seals, penguins and birds in Antarctica. She works with datasets in the petabytes, and the SeaWulf has revolutionized the speed in which the data is analyzed. Funding for the Seawulf was provided by the National Science Foundation...
Stony Brook University - Nov 8, 2023

Artificial Intelligence / Machine Learning

NSF and partners kick off the National Artificial Intelligence Research Resource Pilot Program

...U.S. National Science Foundation kicked off a collaborative process to design a pilot program for a National Artificial Intelligence Research Resource (NAIRR). NAIRR is a concept for a shared national research infrastructure that will connect U.S. researchers to responsible and trustworthy AI resources, as well as the needed computational, data, software, training and educational resources to fuel AI research and discovery. On Oct. 30, President Biden signed Executive Order 14110 directing NSF to launch the NAIRR pilot program by bringing together federal and private sector contributions to expedite federal government support for responsible AI research and the U.S. AI research community, particularly researchers in academia and small businesses. Recognizing NSF's leading role in supporting AI innovation and cultivation of AI talent across the country, the Executive Order directs NSF to: expand its network of National AI Research Institutes, currently a $500 million investment to advance AI research across a range of application areas; establish an NSF Regional Innovation Engine to build an AI-focused innovation center outside of existing technology hubs; and prioritize resources to support AI-related education and workforce development through existing programs...
National Science Foundation - Nov 9, 2023

Discussions with DTRA: Episode 8 Growing an AI-Ready DoD Workforce

...The DTRA Podcast series provides agency members with a platform to discuss interesting mission-related, morale-boosting or special interest item topics. In Episode 8: Growing an AI-Ready DoD Workforce, Dr. Michael Howard and Dr. Diana Gehlhaus discuss the importance of growing an AI-ready Department of Defense (DoD) workforce...
Defense Threat Reduction Agency (DTRA) - Nov 10, 2023

A National Institute of Justice fellowship allows a Rochester graduate student to develop novel defenses against deepfake scams

...Artificial intelligence-powered audio generation is making it increasingly hard to distinguish between real and fake audio. "Neil" Zhang, an electrical and computer engineering

PhD student at the University of Rochester, received a National Institute of Justice graduate research fellowship to develop new audio deepfake detection systems. Zhang is also developing watermarking techniques for the audio-generation process that identify the origins of deepfakes. Akin to exploding dye packs that help identify money stolen from banks, these watermarks could be presented as evidence in cases where fraudulent activity took place. "Criminals who create these deepfakes typically do not have a very high technology background," says Zhang. "They are often using open-source code or an API [application programming interface] provided by a company. So, if the developers who create these algorithms can add a watermark to their systems, experts can identify where deepfakes occur." ...
University of Rochester School of Nursing - Nov 9, 2023

ONR/NSF-funded researchers present a new technique on how to use AI for discovery — without leading science astray

...Researchers at the University of California, Berkeley, present a new statistical technique for safely using the predictions obtained from machine learning models to test scientific hypotheses. The technique, called prediction-powered inference (PPI), uses a small amount of real-world data to correct the output of large, general models — such as AlphaFold, which predicts protein structures — in the context of specific scientific questions. Scientists may be tempted to use the predictions from AlphaFold as if they were data to compute classical confidence intervals, ignoring the fact that these predictions are not data. The problem with this approach is that machine learning systems have many hidden biases that can skew the results. These biases arise, in part, from the data on which they are trained. PPI allows scientists to incorporate the predictions from models like AlphaFold without making any assumptions about how the model was built or the data it was trained on. To do this, PPI requires a small amount of data that is unbiased, with respect to the specific hypothesis being investigated, paired with machine learning predictions corresponding to that data. By bringing these two sources of evidence together, PPI is able to form valid confidence intervals. This research was supported by the Office of Naval Research and the National Science Foundation...
Berkeley News - Nov 9, 2023

Robotics / Autonomous Vehicles

NASA/NSF/AFOSR funds new algorithm that finds failures and fixes in all sorts of autonomous systems

...MIT engineers have developed an approach that can be paired with any autonomous system, to quickly identify a range of potential failures in a variety of simulated autonomous systems, including a small and large power grid network, an aircraft collision avoidance system, a team of rescue drones, and a robotic manipulator. Their work focuses on robotic systems and finding ways to make them more resilient in their environment. They start with a computer simulation of the system that represents its underlying physics and all the variables that might affect the system's behavior. They then run the simulation with a type of algorithm that carries out "adversarial optimization" — an approach that automatically optimizes for the worst-case scenario by making small changes to the system, over and over, until it can narrow in on those changes that are associated with the most severe failures. This research is supported, in part, by NASA, the National Science Foundation, and the U.S. Air Force Office of Scientific Research...
MIT News - Nov 9, 2023

NSF funds research that could help design drones to navigate complex environments by studying hummingbirds' unique sideways flutter

...Hummingbirds can't bend their wing bones during flight, so how do they transit the gaps between leaves and tangled branches? Researchers show that hummingbirds have evolved their own unique strategies — for slit-like gaps too narrow to accommodate their wingspan, hymmingbirds scooch sideways through the slit, flapping their wings continually so as not to lose height. For smaller holes — or if the birds are already familiar with what awaits them on the other side — they tuck their wings and coast through, resuming flapping once clear. Understanding the strategies that birds use to maneuver through a cluttered environment may eventually help engineers design drones that better navigate complex environments. ... The work was funded by a grant from the National Science Foundation...
Berkeley News - Nov 9, 2023

DOD/ARO Award $752K DOD Grant for Autonomous Systems and Robotics Research

...Imagine a swarm of drones flying above a rocky shoreline in search of survivors from a sailboat accident, or a gaggle of robots on the ground working as a unified team to assess the health of a farmer's land before planting season. At Texas A&M University-Corpus Christi, researchers in the Collaborative Robots and Agents Lab are working to explore the possibilities of utilizing controlled and coordinated robots designed to work as a team. Their work is sponsored by a $752,000 Department of Defense (DOD) grant. Coordinated Autonomous Systems for Exploration and Reconnaissance (CASER) project will conduct research in three main areas: distributed control of multirobot systems and multisensory synthesis; models and metrics for multirobot teams; and information processing and fusion. The team will conduct indoor and outdoor experiments on distributed control of UAS (Unmanned Autonomous Systems) and their autonomy, swarm coordination, and multimodal data collection with 3D light detection and ranging (LIDAR) instruments, thermal cameras, and cameras. The team will also study the use of ground and aerial robots in conducting structural health inspections, building digital twins, and will conduct virtual/augmented reality experiments to interact with the UAS. The award is the result of a merit competition administered by the Army Research Office under policy and guidance of the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)), to increase the capabilities of HBCU/MIs to perform defense research. The Army Research Office is an element of the U.S. Army Combat Capabilities Development Command's Army Research Laboratory...

Cybersecurity / Privacy

NSA and ESF Partners Release Recommended Practices for Software Bill of Materials Consumption

...The National Security Agency (NSA), Office of the Director of National Intelligence (ODNI), the Cybersecurity and Infrastructure Security Agency (CISA), and industry partners have released a cybersecurity technical report (CTR), "Securing the Software Supply Chain: Recommended Practices for Software Bill of Materials Consumption." The guidance in this release aids software developers, suppliers, and customer stakeholders in ensuring the integrity and security of software via contractual agreements, software releases and updates, notifications, and mitigations of vulnerabilities. The report was developed by the Enduring Security Framework (ESF) Software Supply Chain Working Group, an NSA, ODNI, and CISA-led a public-private cross-sector group, to provide details on recommended practices as a basis for describing, assessing, and measuring security practices relative to the software lifecycle...

National Security Agency/Central Security Service - Nov 10, 2023

DARPA Funds the Safety Aspects of Virtual Reality and the Psych Side of Cyber

...LSU researchers Ibrahim "Abe" Baggili and Andrew Webb, both faculty in the division of computer science and engineering in the LSU College of Engineering, received $600K from DARPA to study safety aspects of virtual and augmented reality applications for U.S. military missions and training. Their project, "Mixed Reality Visual Deception for Mission Deviation & Distraction," bridges cybersecurity with psychology and human behavior to understand the potential effects on people of compromised software and hardware. They brought Michael Cole Fontenot on board to study the psychological side. Fontenot, a sophomore and psychology major at LSU, is researching the psychological aspects of military cybersecurity. The research explores the behavior and physical safety of people who use virtual or augmented reality devices or applications where false, deceptive or overwhelming amounts of information could be maliciously introduced through a cybersecurity breach. The research aligns with the defense priority of LSU's Scholarship First Agenda and impacts national security as the U.S. Department of Defense explores the use of these emerging technologies...

Louisiana State University - Nov 9, 2023

DOE & UH hold CyberStrike cybersecurity training to defend against sabotage

...The University of Hawai'i System and the U.S. Department of Energy (DOE) held CyberStrike: LIGHTS OUT and CyberStrike: NEMESIS training workshops. With cyber attacks on the rise worldwide, the importance of such education is critical to operations of industries at all levels. The training workshops enhanced the ability of critical infrastructure sector owners and operators to prepare for a cyber incident impacting operational technology through instruction and hands-on exercises. Collaborators for the event included U.S. DOE. DOE's CESER office, in collaboration with the Idaho National Laboratory, developed the CyberStrike Training Program...

The Magazine of the University of Hawaii - Malamalama - Nov 13, 2023

5G, Wireless Spectrum, Networking & Communications

FACT SHEET: Biden-Harris Administration Issues Landmark Blueprint to Advance American Innovation, Competition and Security in Wireless Technologies

...The Biden-Harris Administration is issuing a landmark National Spectrum Strategy and a Presidential Memorandum on modernizing U.S. spectrum policy that, together, lay out a blueprint for American innovation, competition, and security in advanced wireless technologies. This blueprint includes new actions to improve spectrum management and spectrum access—including a study of more than 2,700 megahertz of spectrum for potential repurposing that will help ensure that both the public and private sectors have the spectrum resources they need to deliver critical services to every community in America. It will also ensure that the U.S. uses spectrum policy as a critical lever to retain global leadership in wireless technology, creating an ecosystem of equipment, products, and applications and a virtuous cycle of innovation. The National Strategy and Presidential Memorandum will guide decisions about how to allocate limited spectrum resources and ensure these decisions are made through a rigorous, transparent process, which is more important today than ever, as new technologies create increasing demands for spectrum. Innovations ranging from 5G networks, to precision agriculture, to unmanned aerial vehicles, to moon missions take large amounts of spectrum to operate. Meeting the demands of innovation requires America's spectrum policy to adapt and improve...

The White House - Nov 13, 2023

Think You Know What a Second Is? It Will Likely Change in the Next Decade.

...Prior to 1967, the official time reference for the second was the stable but slow rotation of the Earth relative to the cosmos. But Earth's rotation can slow down and speed up based on the gravitational influence of the Moon and the movement of the outer shell of the Earth. After 1967, the second's definition changed to one based on the exquisitely stable energy levels in atoms, hence the term "atomic clock." This blog post will explain how we define time with atoms, how we use timing in modern society, and whether better timing and a future redefinition of the second might impact our lives and modern technology. While physical oscillation keeps time in large grandfather clocks, which were widely used to keep precise time until the early 1900s, a more portable and higher accuracy clock was developed to meet the more accurate timing needs of modern society. All portable electronics use specialized quartz crystals to keep time. In quartz oscillators, the forces between the atoms making up the crystal and other factors determine the tone, or frequency, of the mechanical resonance. Today, quartz oscillators only give timing errors of about one second per day. Timing errors among electronic clocks that keep time across the internet can cause problems as mundane as lag times in gaming to as serious as GPS errors for planes. The Cs-133 atomic clock that currently defines the second is very accurate. If a timing error of about one second in about 150 million years is not good enough, clocks based on atoms with resonances at optical frequencies can be used to keep time to a one second error in 15 billion years! ...
National Institute of Standards and Technology - Nov 8, 2023

NOAA-21 satellite is now operational

...NOAA-21, the latest satellite in NOAA's Joint Polar Satellite System, is operational. The satellite joins its predecessors, Suomi NPP and NOAA-20, each circling the globe 14 times a day, providing a continuous stream of data to improve the accuracy of NOAA's 3–7 day forecasts. This includes observations for extreme weather events and monitoring climate change. NOAA-21 provides NOAA's National Weather Service with global data for the numerical weather prediction models used to develop timely and accurate U.S. weather forecasts. In addition, high-resolution imagery from the satellite's Visible Infrared Imaging Radiometer Suite, known as VIIRS, will enable NOAA-21 to detect fog, Arctic sea ice, volcanic eruptions and wildfires. NOAA funds and manages the JPSS Program, operations and data products. On behalf of NOAA, NASA develops and builds the instruments and spacecraft, and launches the satellites. NASA developed the ground system, which NOAA operates and maintains...
National Oceanic and Atmospheric Administration - Nov 8, 2023

Researchers at NASA and the University of Texas at Austin Develop a New Technique that Could Improve GPS

...A new scientific technique could significantly improve the reference frames that millions of people rely upon each day when using GPS navigation services. Researchers at The University of Texas at Austin's Applied Research Laboratories and NASA's Goddard Space Flight Center have formed a radio interferometer between a GPS antenna and receiver and a large radio telescope. The new technique leverages a type of radio interferometer, a device that measures the difference in arrival time of radio waves emitted by distant astronomical sources, with antennas that detect and record the emission. The team used an approach called Very Long Baseline Interferometry to use the sensitivity of the radio telescope to increase the GPS receiver's sensitivity. This additional sensitivity enabled them to extend the reach of the receivers to observe powerful jets of radiation and particles generated by supermassive black holes up to 5 billion light-years away....
UT News - The University of Texas at Austin - Nov 8, 2023

Oregon State to receive $6.5M from NOAA to modernize geospatial coordinate system

...Oregon State University is one of four institutions selected to advance a federal effort to modernize the National Spatial Reference System, which underpins surveying, mapping, autonomous vehicle navigation, precision agriculture and the rest of the United States' geospatial economy. OSU will receive $6.5 million over five years from the National Oceanic and Atmospheric Administration for research to be conducted by the new Geospatial Center for the Arctic and Pacific, or GCAP. The funding is through NOAA's National Geodetic Survey and is part of nearly $20 million awarded overall. The foundation of those technologies, and the entire U.S. geospatial economy, is the National Spatial Reference System. The system is the basis for how spatial coordinates throughout the nation are determined, but its last major update was four decades ago and modernization is critically needed to meet 21st century accuracy demands...
Oregon State University - Nov 8, 2023

Advanced Manufacturing

Celebrating Manufacturing Day: Ensuring Skilled Workers for the Next Generation

...The Baldrige Performance Excellence Program (BPEP), part of the National Institute of Standards and Technology, is supporting the resilience of both U.S. manufacturers and the education organizations among its community who are nurturing the skilled workforce of the next generation who could fill those jobs. BPEP is revising its Baldrige Award process, which will be rolled out in 2024, to recognize U.S. role models of resilience and long-term success. Part of that recognition includes fostering the sharing and adoption of proven practices, including workforce practices, and providing products, services, and insights to help manufacturers and other organizations prepare, adapt, innovate, and thrive despite skills gaps and disruptions. In addition, to help U.S. manufacturers ensure that they have the systems and processes in place to implement the latest advanced technologies and improve their quality of operations, a project team with expertise in Baldrige and manufacturing created an assessment and accompanying resources based on

the Baldrige Excellence Framework®. The Baldrige framework remains BPEP's flagship product, which can be used for measuring performance and planning in an uncertain environment. A manufacturer, as well as other organizations, can use the Baldrige framework to organize and integrate their approaches to improve productivity and effectiveness...
National Institute of Standards and Technology - Nov 14, 2023

Microelectronics

Better Together: New 2D X-ray Multilayer Lens Overcomes Alignment Challenge

...Scientists have developed a new type of lens that focuses an X-ray beam to nanometer levels. Microelectronics and tiny qubits for quantum computers are technologies of the future that can tackle society's biggest challenges. However, to develop these minuscule powerhouse devices, researchers need to study them at the nanoscale. One efficient, non-destructive way is to use ultrabright X-ray beams available at Department of Energy Office of Science user facilities such as the National Synchrotron Light Source II (NSLS-II). To allow researchers to "see" into these tiny devices, scientists at NSLS-II developed a 2D X-ray optic that focuses hard X-rays down to approximately 10 nanometers. The 2D optics are based on advances in microfabrication—the methods used to make tiny objects such as computer circuits...
Department of Energy - Nov 13, 2023

NSF Funding to Push Moore's Law to New Heights

...Illinois Institute of Technology Assistant Professor of Materials Science and Engineering Heng Wang has received an award from the National Science Foundation to investigate a whole new dimension of information to the way data is stored. The idea behind spintronics is to develop hardware that can change and maintain the state of the electron spin in a way that encodes a new layer of ones and zeroes in the electrons already present in a device. This grant is provided through NSF's Future of Semiconductors (FuSe) program...
Chicago-Kent College of Law - Nov 9, 2023

NSF invests in semiconductor research at McKelvey School of Engineering

...Sang-Hoon Bae, an assistant professor of mechanical engineering and materials science, and Mark Lawrence, an assistant professor of electrical and systems engineering, both at Washington University in St. Louis, are undertaking projects to transform computing through developing next-generation technologies. Bae's work focuses on integrating 2D elements into advanced 3D microelectronics. Lawrence will enhance artificial intelligence (AI)-driven machine vision systems to achieve real-time adaptivity and high energy efficiency in a range of applications. They each received a grant from the National Science Foundation (NSF) as part of a $45.6 million investment into 24 research and education projects. The projects are supported by funding from the CHIPS and Science Act of 2022 and by the NSF's Future of Semiconductors program. The program aims to accelerate the growth of a U.S.-based workforce and knowledge that will enable innovative semiconductor and microelectronics development. Bae's group aims to create the next generation of computer processors by integrating incredibly thin 2D materials into monolithic 3D computer chips...
The Source - Washington University in St. Louis - Nov 10, 2023

Climate Change / Green Energy & IT

FACT SHEET: Biden-Harris Administration Releases Fifth National Climate Assessment and Announces More Than $6 Billion to Strengthen Climate Resilience Across the Country

...To equip Americans with the best available science and understanding of climate change impacts in the United States, President Biden is announcing the release of the Fifth National Climate Assessment (NCA5). NCA5, which assesses changes in the climate, its national and regional impacts, and options for reducing present and future risk, indicates that not only is every region of the country already experiencing the impacts of climate change, but ambitious climate action is underway in every region as well. President Biden announced more than $6 billion in investments to make communities across the country more resilient to the impacts of climate change, including by strengthening America's aging electric grid infrastructure, reducing flood risk to communities, supporting conservation efforts, and advancing environmental justice. The Administration is also releasing new resources to boost climate resilience efforts. Complementing the robust scientific findings of NCA5, the new web-based NCA Atlas allows Americans to explore climate projections in their own state or county to inform resilience, adaptation, and mitigation efforts...
The White House - Nov 14, 2023

Digital Health

A Proclamation on National Rural Health Day, 2023

...The American Rescue Plan directed $8.5 billion to rural providers so they could keep hospitals and clinics open during the pandemic. We also supported the establishment of a new Rural Emergency Hospital designation, which provides struggling rural hospitals with a new option for maintaining a presence within the community. We have provided $1.5 billion in scholarships and student loan assistance for rural clinicians and nurses so that medical personnel can fill these critical roles. The administration has made historic investments in the expansion of rural broadband and services that can be delivered via telehealth to Medicare beneficiaries...
The White House - Nov 15, 2023

The Digital Health Divide for Populations that have been Marginalized

...ONC has consistently found that rates of interoperable exchange for smaller, rural, and independent hospitals have notably lagged behind other hospitals. For example, in both 2017 and 2021, rural hospitals were 23 percentage points less likely to engage in interoperable exchange compared to urban hospitals. A fundamental challenge we identified is that there are several ways to identify hospitals that disproportionately treat economically and socially marginalized populations. In our research, we assessed four ways based upon key federal, state, and local government programs: * Medicaid caseload * Medicare Disproportionate Share Hospital (DSH) Index * Uncompensated care burden * Critical Access Hospital (CAH) designation We also assessed a fifth measure: the Social Deprivation Index (SDI). A relatively new type of measure, SDI draws on US census data about social drivers of health that collectively reflect the relative deprivation of a geographic area and its residents – and that have been validated to predict health outcomes better than poverty alone...
Health IT - Nov 13, 2023

DOD/NIH Funds Groundbreaking Prosthetic Hand Pioneered by I³R that is Featured at White House Demo Day

...The White House Office of Science and Technology Policy invited the University of Arkansas Institute for Integrative & Innovative Research (I³R) to demonstrate its innovative prosthetic hand system at the 2023 American Possibilities: White House Demo Day held in Washington, D.C., an event designed to showcase the breakthrough advancements that are possible with federally funded research and development. Ranu Jung, Ph.D., U of A associate vice chancellor, founding executive director of I³R said, "Indeed 'American Possibilities' are what keep our nation on the leading-edge of innovation and federal funding is crucial to the advancement of breakthrough innovations like our Neural-Enabled Prosthetic Hand System — it is what makes achieving moonshot ideas possible." The project is supported by the U.S. Department of Defense and National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health...
News - University of Arkansas - Nov 9, 2023

UH to use AI to advance health equity with $500K grant from NIH

...A $500,000 grant will help the University of Hawai'i provide Hawai'i's healthcare community with facilitated access to open-source artificial intelligence (AI) and machine learning (ML) tools. This initiative stands at the forefront of addressing the health disparities affecting minority and marginalized communities in Hawai'i. UH was selected for the competitive subaward from the NIH—AIM AHEAD program (The National Institutes of Health's—Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity), which seeks to advance health equity and research diversity through AI/ML...
The Magazine of the University of Hawaii - Malamalama - Nov 9, 2023

NIH/CDC-funded study finds increasing workplace flexibility is associated with lower risk of cardiovascular disease

...Increasing workplace flexibility may lower certain employees' risk of cardiovascular disease, according to a new NIH-funded study led by Harvard T.H. Chan School of Public Health and Penn State University. In workplaces that implemented interventions designed to reduce conflict between employees' work and their personal/family lives, researchers observed that employees at higher baseline cardiometabolic risk, particularly older employees, experienced a reduction in their risk for cardiovascular disease equivalent to between five and 10 years of age-related cardiometabolic changes. Researchers found when stressful workplace conditions and work-family conflict were mitigated, they observed a reduction in the risk of cardiovascular disease among more vulnerable employees, without any negative impact on their productivity. ... Funding for the study came from the National Institutes of Health and the Centers for Disease Control and Prevention...
Harvard Public Health Review - Nov 8, 2023

Other IT Related

Scientists use quantum biology, AI, and a supercomputer to sharpen genome editing tool

...Scientists at Oak Ridge National Laboratory used their expertise in quantum biology, artificial intelligence and bioengineering to improve how CRISPR Cas9 genome editing tools work on organisms like microbes that can be modified to produce renewable fuels and chemicals. To improve the modeling and design of guide RNA, the ORNL scientists sought a better understanding of what's going on at the most basic level in cell nuclei, where genetic material is stored. They turned to quantum biology, a field bridging molecular biology and quantum chemistry that investigates the effects that electronic structure can have on the chemical properties and interactions of nucleotides, the molecules that form the building blocks of DNA and RNA. The scientists built an explainable artificial intelligence model called iterative random forest. They trained the model on a dataset of around 50,000 guide RNAs targeting the genome of E. coli bacteria while also taking into account quantum chemical properties. ORNL researchers validated the explainable AI model by conducting CRISPR Cas9 cutting experiments on E. coli with a large group of guides selected by the model. Using explainable AI gave scientists an understanding of the biological mechanisms that drove results, rather than a deep learning model rooted in a "black box" algorithm that lacks interpretability. The explainable AI model, with its thousands of features and iterative nature, was trained using the Summit supercomputer at ORNL's Oak Ridge Leadership Computer Facility, or OLCF, a DOE Office of Science user facility. Refining CRISPR Cas9 models gives scientists a higher-throughput pipeline to link genotype to phenotype, or genes to physical traits...
Oak Ridge National Laboratory - Nov 7, 2023

NSF Funds Digital Twin Technology of UT Campus to Visualize Present, Past, Future Energy Needs

...A new "digital twin" of The University of Texas at Austin campus gives the clearest picture yet of historical and current energy usage. A digital twin is a virtual representation of a real-life object that visualizes large swathes of data about the physical space. The digital twin displays past, present and future energy usage in buildings across campus, offering different scenarios based on climate models. The work is part of a grant the researchers received from the National Science Foundation to deploy digital twin technology across a variety of applications, from individual buildings to cities to the atmosphere around us...
UT News - The University of Texas at Austin - Nov 9, 2023

STEM / Workforce & IT

Montana State receives Air Force Office of Scientific Research grant to host geospatial skills camp for high schoolers in five rural Montana communities

...High school students in five rural Montana communities will have the opportunity to attend a weeklong camp this summer focused on developing geospatial skills. The camp is being made possible thanks to an $85,000 grant awarded to Montana State University from the Air Force Office of Scientific Research. Montana is one of the most rural states in the U.S., with 75% of school districts considered rural – the highest proportion of any state. The MSU team planning the camp includes an undergraduate student in education and an undergraduate student in earth sciences who will work together to create the camp's curriculum. Community educators will customize the camp curriculum for their particular area; topics may include maps for analysis and navigation; collecting, analyzing and disseminating imagery from terrestrial, satellite and other sources; awareness of the skills and required credentials for piloting unmanned aerial vehicles; remote sensing; basic electronics and circuitry related to sensor development and use; and geospatial analysis tools. One goal of the camp is to help kids learn about potential careers and fields of study related to geospatial science and engineering, particularly those connected to the Air Force...
Montana State University - Nov 9, 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