CYBERSECURITY AWARENESS MONTH	FEDERAL AGENCY FUNDING OPPORTUNITIES	ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	QUANTUM	CYBERSECURITY / PRIVACY	INFORMATION INTEGRITY RESEARCH & DEVELOPMENT	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!

Cybersecurity Awareness Month

Cybersecurity Awareness Month, 2023
...Digital technologies today touch nearly every aspect of American life—from our classrooms and communities, to our economy and national security. That is why—this Cybersecurity Awareness Month—my Administration renews our commitment to securing cyberspace and seizing the unlimited potential of our digital future. Cyber threats cross borders, which is why we are also taking the same historic action on the global stage. In 2021, my Administration established the International Counter-Ransomware Initiative, which will convene for the third time this fall in Washington, D.C., bringing together more than 40 partners from around the globe to address the scourge of ransomware. We have created new cyber dialogues with allies and partners to enhance our collective cyber defense and deterrence—including launching a new virtual rapid response mechanism at NATO to ensure Allies can effectively and efficiently offer each other support in response to cyber incidents. And, early this year, we released a new National Cybersecurity Strategy—which will allow us to work in lockstep with our partners to ensure cyberspace is grounded in democratic values...
Federal Register - Oct 4, 2023

This Cybersecurity Awareness Month: Staying Safe Online
...At S&T, our goal is to be on the cutting-edge when it comes to ensuring our nation's cybersecurity. We do this in a number of ways—through collaborative efforts to support

and advance the Cybersecurity and Infrastructure Security Agency's (CISA) mission, by developing tools to identify potential vulnerabilities in our nation's critical infrastructure systems and networks, and by implementing solutions to improve cybersecurity-related risk analysis processes and assessment. To kick off Cybersecurity Awareness Month, I'd like to spotlight some examples of the work that we have actively underway with and for CISA. S&T's Cybersecurity Threats Technology Center is supporting research to enhance the cybersecurity and resilience of our critical infrastructure. One effort that kicks off this month is the Shared Intelligence Resilience project, which will look at how artificial intelligence (AI) and machine learning can be leveraged to identify and mitigate vulnerabilities across distributed systems and organizations; privacy and confidentiality techniques that can increase the security of these mechanisms; and incentivization models that will encourage participation in collective cybersecurity frameworks. Another one of S&T's upcoming research initiatives focuses on countering adversarial use of AI in zero trust environments. This project will take a more model-based approach to quantifying what information is needed about cyber-physical-human systems to design intelligent attacks that are difficult to detect and may have significant cascading effects...
Homeland Security - Oct 3, 2023

Cybersecurity Awareness Month 2023 Blog Series | Using Strong Passwords and a Password Manager
...This blog is the second one in our 2023 Cybersecurity Awareness Month series and examines different factors associated with using strong passwords and a password manager. We interviewed NIST's Yee-Yin Choong and Meghan Anderson to get their unique thoughts and insights. One research area is human-centered cybersecurity with a focus on youth and parents. Technology use by youths has increased at younger ages—putting more information online and creating new concerns for their safety and implications for their privacy. Children don't create complicated passwords—which often consist of concepts reflecting the current state of their lives such as sports, video games, names, animals, movies, titles (princess, queen, etc.), numbers, and colors. Another notable finding was that younger kids rely on family support for creating their passwords at home. Privacy Engineering Program (PEP) often considers how cybersecurity and privacy overlap—and that cybersecurity-related events can create privacy risks for individuals and organizations. When it comes to using strong passwords and a password manager, both cybersecurity and privacy play a role in keeping your accounts and personal information secure...
National Institute of Standards and Technology - Oct 10, 2023

Federal Agency Funding Opportunities

Biden-Harris Administration Announces $5 Million to Support Cleaner Domestic Manufacturing
...The U.S. Department of Energy today announced $5.2 million from the Industrial Assessment Centers (IAC) Implementation Grants program for 41 small- and medium-sized manufacturers (SMMs) across the country to implement improvements at facilities that will save energy and reduce greenhouse gas emissions. The first round of 41 implementation grants will receive $5.2 million in grant funding that will be matched by $11.7 million from recipients. The grants support a wide variety of projects, including onsite solar, geothermal heat pump, and biomass boilers installations, improvements for lighting, heating, ventilation, and air conditioning, electrifying industrial equipment and fleets, and more. Applications from eligible SMMs for implementation grants may be submitted at any time throughout the next year and will be reviewed quarterly, with an initial application deadline of December 31, 2023. The IAC Program team will begin holding monthly "office hour" sessions and the first one will be held on October 19th, 2023, at 1:00 pm ET...
Department of Energy - Oct 6, 2023

Artificial Intelligence / Machine Learning

Readout of White House Roundtable on Artificial Intelligence and Health
...The White House Office of Science and Technology Policy this week convened a distinguished group of leaders from across sectors, including healthcare, academia, industry, and patient advocacy, for a discussion on how artificial intelligence (AI) can be safely deployed to improve health outcomes for all Americans. This week's roundtable highlighted the Biden-Harris Administration's priorities to develop and deploy advanced AI tools that benefit the health and wellbeing of all Americans. The discussion focused on deepening awareness and understanding of the benefits and risks of AI and welcoming new ideas on the responsible development of AI. Arati Prabhakar, Assistant to the President and Director of the White House Office of Science and Technology Policy (OSTP), encouraged roundtable participants to seize the powerful tools of AI to improve health outcomes for more Americans, while also leveraging best practices for effective risk management and mitigation. Director Prabhakar highlighted the significant actions, which included releasing the landmark Blueprint for an AI Bill of Rights...
The White House - Oct 6, 2023

USPTO Virtual Assistant now available for Patents customers

...Last week, the USPTO launched the Virtual Assistant as a feature on select Patents webpages. This expansion from trademarks-to patents-related content continues our efforts to enhance our customer service and increase access to our resources. The Virtual Assistant provides answers to common customer questions and makes it easier to find the status of your patent application. Simply type "What is the status of my application?" into the chat box and enter your application number when prompted. The tool will guide you to the most up-to-date information in Patent Center. This expanded tool is another way we have leveraged machine learning to offer improved services...
United States Patent and Trademark Office - Oct 10, 2023

Using artificial intelligence, Argonne scientists develop self-driving microscopy technique

...Researchers at the U.S. Department of Energy's (DOE) Argonne National Laboratory have developed an autonomous, or self-driving, microscopy technique. It uses AI to selectively target points of interest for scanning. This innovative approach identifies clusters of intriguing features, bypassing humdrum regions of monotonous uniformity. The AI algorithm at the heart of the experiment initiates the scanning process by selecting a set of random points on the sample. It then simultaneously gathers data from these points while predicting subsequent points of interest. This on-the-fly prediction capability empowers researchers to accelerate data acquisition, eliminating the need for human intervention and dramatically expediting the experiment. One of the surprising things about the AI model is that it doesn't need to be trained on a technical dataset...
Argonne National Laboratory - Oct 4, 2023

USAF/ONR-funded AI copilot enhances human precision for safer aviation

...The Air-Guardian is a system developed by researchers at the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL). As modern pilots grapple with an onslaught of information from multiple monitors, especially during critical moments, Air-Guardian acts as a proactive copilot; a partnership between human and machine, rooted in understanding attention. It uses eye-tracking, and for the neural system, it relies on something called "saliency maps," which pinpoint where attention is directed. The maps serve as visual guides highlighting key regions within an image, aiding in grasping and deciphering the behavior of intricate algorithms. The true strength of Air-Guardian is its foundational technology. Using an optimization-based cooperative layer using visual attention from humans and machine, and liquid closed-form continuous-time neural networks (CfC) known for its prowess in deciphering cause-and-effect relationships, it analyzes incoming images for vital information. Complementing this is the VisualBackProp algorithm, which identifies the system's focal points within an image, ensuring clear understanding of its attention maps. This research was partially funded by the U.S. Air Force (USAF) Research Laboratory, the USAF Artificial Intelligence Accelerator, and the Office of Naval Research...
MIT News - Oct 3, 2023

Quantum

NSF congratulates laureates of the 2023 Nobel Prize in chemistry

...The U.S. National Science Foundation congratulates Moungi G. Bawendi, Louis E. Brus and Alexei I. Ekimov on their 2023 Nobel Prize in chemistry. The laureates discovered quantum dots and a method for reliably producing them at a high quality. Quantum dots are extremely small semiconductor particles (a few nanometers in diameter) that can have unique optical properties potentially applicable for a wide range of uses, including optical devices, solar cells, biomedical imaging and quantum computing. NSF is proud to have supported the research and early-career development of Bawendi and Brus. "Today, quantum dots are manufactured into technologies, products and services that are part of our everyday lives — from illuminating computer monitors and television screens to helping doctors map biological tissue," says NSF Director Sethuraman Panchanathan...
National Science Foundation - Oct 4, 2023

Twisted Science: NIST Researchers Find a New Quantum Ruler to Explore Exotic Matter

...When two or more overlying sheets of graphene are slightly misaligned — twisted at certain angles relative to each other — they take on a plethora of exotic identities. Depending on the twist angle, these materials, known as moiré quantum matter, can suddenly generate their own magnetic fields, become superconductors with zero electrical resistance, or conversely, turn into perfect insulators. Joseph A. Stroscio and his colleagues at the National Institute of Standards and Technology (NIST), along with an international team of collaborators, have developed a "quantum ruler" to measure and explore the strange properties of these twisted materials. The work may also lead to a new, miniaturized standard for electrical resistance that could calibrate electronic devices directly on the factory floor. To measure the energy levels, the team used a versatile scanning tunneling microscope that Stroscio designed and built at NIST. When the researchers applied a voltage to the graphene bilayers in the magnetic field, the microscope recorded the tiny current from the electrons that "tunneled" out from the material to the microscope probe tip. In moiré quantum materials, electrons have a range of possible energies — highs and lows, shaped like an egg carton — that are determined by the electric field of the materials. The electrons are concentrated in the lower energy states, or valleys, of the carton. The large spacing between the valleys in the bilayers, bigger than the atomic spacing in any single layer of graphene or multiple layers that aren't twisted, accounts for some of the unusual magnetic properties the team found...
National Institute of Standards and Technology - Oct 5, 2023

Quantum computer unveils atomic dynamics of light-sensitive molecules

...National Science Foundation funded researchers at Duke University have implemented a new method to observe a quantum effect in the way light-absorbing molecules interact with incoming photons. Known as a conical intersection, the effect puts limitations on the paths molecules can take to change between different configurations. The method makes use of a quantum simulator, developed from research in quantum computing, and addresses a long-standing, fundamental question in chemistry critical to processes such as photosynthesis, vision and photocatalysis. It is also an example of how advances in quantum computing are being used to investigate fundamental science. Measuring the quantum effect has always been challenging because it is both short-lived and small -- on the scale of atoms. Any disruption to the system will prevent its measurement. The researchers used a five-ion quantum computer that uses lasers to manipulate charged atoms in a vacuum, providing a high level of control. Because the quantum dynamics of the trapped ions are about a billion times slower than those of a molecule, the scientists were able to make direct measurements of the geometric phase in action...

National Science Foundation - Oct 5, 2023

Cybersecurity / Privacy

NSA and CISA Advise on Top Ten Cybersecurity Misconfigurations

...The National Security Agency (NSA) and the Cybersecurity and Infrastructure Security Agency (CISA) are releasing a joint Cybersecurity Advisory (CSA) highlighting the top ten most common cybersecurity misconfigurations found in large organizations' networks. The CSA details tactics, techniques, and procedures (TTPs) that cyber actors could use to compromise these networks, as well as mitigations to defend against this threat. The report includes information from NSA and CISA Red and Blue team assessments, as well as activities of NSA and CISA Hunt and Incident Response teams. Some of the misconfigurations mentioned in the CSA include default configurations of software and applications, weak or misconfigured multifactor authentication (MFA) methods, and unrestricted code execution. NSA and CISA encourage network defenders and software manufacturers to implement the recommendations found within the Mitigations section of this advisory to reduce the risk of compromise...

National Security Agency/Central Security Service - Oct 5, 2023

CISA, Government, and Industry Partners Publish Fact Sheet for Organizations Using Open Source Software

...The Cybersecurity and Infrastructure Security Agency (CISA), Federal Bureau of Investigation (FBI), National Security Agency (NSA), and U.S. Department of the Treasury published new guidance today on "Improving Security of Open Source Software (OSS) in Operational Technology (OT) and Industrial Control Systems (ICS)," developed in collaboration with industry and government partners through the Joint Cyber Defense Collaborative (JCDC) as part of our 2023 OSS planning initiative. This guidance will promote an improved understanding of and highlight best practices and considerations for the secure use of OSS in OT/ICS environments. This guidance is intended to assist both senior leadership and operations personnel at OT/ICS vendors and critical infrastructure entities with better management of risk from OSS use in OT/ICS products, to include software supply chain, and increase resilience using available resources. The ongoing planning and collaborative effort of the JCDC and CISA supports specific objectives in the National Cyber Strategy to scale public-private collaboration, the Office of National Cyber Director Open-Source Software Security Initiative (OS3I) and complements the CISA Open Source Software Security Roadmap to drive adoption of the most impactful security and development of OSS...

CISA - Oct 10, 2023

Securing the Food Pipeline from Cyberattacks

...Sensors detecting the amount of food that herds of cattle are eating. Machines taking thousands of photos of fruit per second to detect their defects and sort them by quality. Robots packing fruit and vegetables into bags and boxes for purchase at grocery stores. The future of farming is advanced technology, and already there are many examples of technologies controlled by smart devices and computer systems. The Food and Agriculture Risk Modeling (FARM) project is the first investigation into cybersecurity vulnerabilities of an increasingly smart food and agriculture sector for the Department of Homeland Security. FARM is proactively identifying the potential vulnerabilities within smart technology systems and calculating the consequences of successful cyberattacks to the economy, animals, humans, and the environment—from financial losses to contamination of food and even death. The team is partnering with farms in the region to understand more about the technology being used and the risks associated with that technology...

Pacific Northwest National Laboratory (PNNL) - Oct 10, 2023

Information Integrity Research & Development

Don't be a target: How to identify adversarial propaganda

...Adversarial disinformation campaigns and influence operations are "gray zone" activities that use technology and tactics to disguise themselves, making it challenging to identify the source of the content. "At the United States Cyber Command, we see the influence piece, which is much more prevalent these days," said U.S. Army Gen. Paul M. Nakasone, commander, U.S. Cyber Command. Nakasone said that CYBERCOM's operations aim to disrupt adversary campaigns designed to harm America by going "after troll farms and other different actors that are trying to create influence." Adversarial disinformation campaigns and influence operations can be identified by knowing where they start — with the Orderers of Disinformation. Orderers of Disinformation are strategic competitors and adversaries, who want to generate and spread a false narrative to distort facts pertaining to past and future events. They hire creators to develop legitimate looking news agencies and social media accounts to push the false narrative into the Information Environment. To spread the orderers' false narrative in the IE, creators use disinformation actors, such as bots, cyborgs, trolls, sockpuppets and amplifiers...
Air Force Materiel Command - Oct 6, 2023

5G, Wireless Spectrum, Networking & Communications

NTIA calls for Strong Digital Discrimination Rules

...The Department of Commerce's National Telecommunications and Information Administration (NTIA) urged the Federal Communications Commission (FCC) to adopt strong rules against digital discrimination. NTIA's filing urges the FCC to adopt a definition of digital discrimination that includes both disparate treatment and disparate impact on protected groups. The core concern in this area is the reality experienced by individuals and communities, including whether fast, reliable, and affordable high-speed Internet service is made available to them on an equal footing with their counterparts...
National Telecommunications and Information Administration - Oct 6, 2023

5 Things to Know About NASA's Deep Space Optical Communications

...NASA's pioneering Deep Space Optical Communications (DSOC) experiment will be the first demonstration of laser, or optical, communications from as far away as Mars. Until now, NASA has used only radio waves to communicate with missions that travel beyond the Moon. Much like fiber optics replacing old telephone lines on Earth as demand for data grows, going from radio communications to optical communications will allow increased data rates throughout the solar system, with 10 to 100 times the capacity of state-of-the-art systems currently used by spacecraft. There is no dedicated infrastructure on Earth for deep space optical communications, so for the purposes of DSOC, two ground telescopes have been updated to communicate with the flight laser transceiver. DSOC is intended to demonstrate high-rate transmission of data of distances up to 240 million miles. Integrated onto the Hale Telescope is a cryogenically cooled superconducting nanowire photon-counting array receiver. The DSOC team even developed new signal-processing techniques to squeeze information out of the weak laser signals that will have been transmitted over tens to hundreds of millions of miles. DSOC is taking optical communications into deep space, paving the way for high-bandwidth communications beyond the Moon and 1,000 times farther than any optical communications test to date...
National Aeronautics and Space Administration - Oct 10, 2023

Shaping the Future of Digital Equity: Communicating Your Feedback

...The National Telecommunications and Information Administration (NTIA)'s $2.75 billion Digital Equity Act Programs are critical for communities in need of access to affordable, reliable, high-speed Internet. Recently, NTIA requested input from our stakeholders and received more than 250 submissions reflecting the voices of more than 400 stakeholders. We specifically sought input from those who are most impacted by our Digital Equity Programs to hear their valuable voices. NTIA observed common themes throughout the comments: *Accurately defining metrics is critical. * It takes a village to achieve digital equity for all. * Equity must be at the center. * Digital equity progress must also further digital literacy and skills...
National Telecommunications and Information Administration - Oct 4, 2023

NSF-supported research finds space weather disrupts nocturnal bird migration

...It's well-known that birds and other animals rely on Earth's magnetic field for long-distance navigation during seasonal migrations. University of Michigan researchers and their colleagues used massive, long-term datasets from networks of U.S. Doppler weather radar stations and ground-based magnetometers—devices that measure the intensity of local magnetic fields—to test for a possible link between geomagnetic disturbances and disruptions to nocturnal bird migration. They found a 9%-17% reduction in the number of migrating birds, in both spring and fall, during severe space weather events. The researchers used images collected at 37 NEXRAD radar stations in the central flyway of the U.S. Great Plains, a major migratory corridor. The NEXRAD radar scans detect groups of hundreds to thousands of migrating birds. Migration intensity—meaning the number of birds in each cluster—can be estimated and direction of flight can be measured. The data trove was fed into two complementary statistical models to measure the putative

effects of magnetic disturbances on bird migration. ... The research was supported by a NSF grant and a National Science Foundation Graduate Research Fellowship Grant...
University of Michigan News Service - Oct 9, 2023

Advanced Manufacturing

A Proclamation on National Manufacturing Day, 2023

... Manufacturing is the backbone of our economy, but for the past few decades, we have not always treated it that way. Our plan is working. We have seen over 13 million new jobs created, including 800,000 manufacturing jobs. Unemployment has been below 4 percent for the longest stretch in over 50 years. This progress is possible because we are doing what has always worked best in our country — investing in America and in American workers. The CHIPS and Science Act is making sure the United States leads the world in innovation by bringing semiconductor manufacturing home so we never again rely on foreign supply chains for the computer chips that power everything in our lives, from cellphones and cars to sophisticated weapons systems. The Inflation Reduction Act is powering a clean energy revolution, increasing our production of essential batteries and clean energy technologies and making sure a sustainable and energy independent future is Made in America. And we are collaborating with employers, unions, community colleges, high schools, and other partners to help more Americans train for the good manufacturing jobs and careers that these investments are creating...
The White House - Oct 5, 2023

Forging the Future: How Advanced Manufacturing Is Revolutionizing Marine Corps Logistics

...The Marine Corps Systems Command's Advanced Manufacturing Systems team, or AMS team, is innovating to overcome the logistical challenges of the modern battlefield. The AMS team is leading the charge to field bleeding-edge solutions to ensure the warfighter has access to mission-critical equipment and replacement parts without having to rely on traditional supply lines or navigate the constraints of iron mountains. Additive manufacturing is a game-changer for the Marine Corps, as it allows equipment to be repaired and innovate solutions right on the frontline. This past June, Navy and Marine engineers demonstrated the technology's real-world potential by successfully 3D-printing a medical cast aboard a Marine Corps Osprey in mid-flight—demonstrating not only an increase in operational survivability but also an enhancement in battlefield lethality by minimizing downtime and accelerating troop readiness...
Marines - Oct 5, 2023

Microelectronics

Penn Engineers Use DOE's Brookhaven NL Technology to Grow Full Wafers of High-Performing 2D Semiconductor

...One of the biggest shortcomings of silicon is that it can only be made so thin because its material properties are fundamentally limited to three dimensions [3D]. For this reason, two-dimensional [2D] semiconductors — so thin as to have almost no height — have become an object of interest to scientists, engineers and microelectronics manufacturers. Thinner chip components would provide greater control and precision over the flow of electricity in a device, while lowering the amount of energy required to power it. A 2D semiconductor would also contribute to keeping the surface area of a chip to a minimum, lying in a thin film atop a supporting silicon device. Researchers at the University of Pennsylvania School of Engineering and Applied Science have grown a high-performing 2D semiconductor to a full-size, industrial-scale wafer. In addition, the semiconductor material, indium selenide (InSe), can be deposited at temperatures low enough to integrate with a silicon chip. The team achieved this groundbreaking purity using a growth technique called "vertical metal-organic chemical vapor deposition" (MOCVD). MOCVD, by contrast, works by sending the indium in a continuous stream while introducing the selenium in pulses. This research used the electron microscopy resources of the Center for Functional Nanomaterials, a U.S. Department of Energy Office of Science User Facility at DOE's Brookhaven National Laboratory...
Brookhaven Lab - Oct 6, 2023

NSF-funded interdisciplinary Rice team tackles the future of semiconductors

...An interdisciplinary team of Rice University scientists has won a $1.9 million National Science Foundation grant from the NSF Future of Semiconductors (FuSe) program for research on materials that could serve as the basis for next-generation energy-efficient computing devices. The team will focus on multiferroics, materials with distinctive electric and magnetic properties that carry "transformative technological potential. The researchers will seek to leverage the spin and charge of electrons in multiferroics in order to process and store information. Their goal is to lower energy consumption for computing...
RICE NEWS - Oct 5, 2023

Climate Change / Green Energy & IT

Marine Carbon Dioxide Removal: Potential Ways to Harness the Ocean to Mitigate Climate Change

...President Biden has set an ambitious U.S. goal to achieve a net-zero emissions economy by no later than 2050, and his Investing in America agenda advances historic climate actions by accelerating the deployment of clean energy, electric vehicles, and public transportation. As these technologies are further refined and scaled for use now, the Biden-Harris Administration is also committed to exploring emerging, next-generation climate technologies. Carbon dioxide removal (CDR) is one of those potentially powerful new tools that focuses on removing CO2 that is already in the atmosphere or in the upper ocean, and permanently storing it for centuries or longer. Marine CDR is less well known than terrestrial CDR, but a variety of ways to capture and store CO2 from the ocean have been suggested. The White House Office of Science and Technology Policy (OSTP) is announcing 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 marine CDR and shape relevant policy and research on safe and effective marine CO2 removal and carbon sequestration...

The White House - Oct 6, 2023

Digital Health

NIH funds new project to focus on health impacts of climate change

...A $574,000 grant from the National Institutes of Health will help support a new climate change and health research area in Penn State's Population Research Institute. Some initiatives of the new climate change and health research area will include training and capacity-building workshops, the formation of a new climate change and health working group, and a mechanism to provide computing and programming support for climate change and health research...

Pennsylvania State University - Oct 3, 2023

NIH Funds Neurogenetic Disease Research

...The National Institutes of Health has awarded the first phase of a roughly $40 million grant to Yale University to advance a novel CRISPR-based gene-editing delivery platform for the targeted treatment of neurogenetic diseases. The two diseases being targeted in the project are Angelman syndrome and H1-4 (HIST1H1E) syndrome. The first phase, worth $26.5 million, is dedicated to generating all preclinical data and other key components towards a clinical trial for both diseases. The new delivery technology — called Stimuli-responsive Traceless Engineering Platform — enables brain-wide delivery of ribonucleoproteins via intrathecal administration and has the potential to cure diseases in the brain through a one-time treatment. This new grant supports the translation of promising technologies from the laboratory into the clinic, where it can directly benefit patients...

Rush University Medical Center - Oct 4, 2023

LLNL and DHS fund DOLCE, an AI tool that reconstructs CT images from limited-view data

...Ulugbek Kamilov and Jiaming Liu in the McKelvey School of Engineering at Washington University in St. Louis collaborated with researchers at the Lawrence Livermore National Laboratory to develop a new tool to do more with less. The team introduced DOLCE, a deep model-based framework designed to overcome the challenges posed by limited-angle computed tomography (LACT). LACT is an imaging technique used in applications ranging from medical diagnostics to security screenings. However, the limited angle coverage in LACT is often a source of severe artifacts, or discrepancies between the reconstructed image and ground truth. DOLCE, which stands for diffusion probabilistic limited-angle CT reconstruction, uses a cutting-edge generative AI model to create multiple high-quality images from severely limited data. While generative AI models can create realistic data, their output might not be accurate. One of DOLCE's major advantages is that it harnesses the power of AI while also providing tools to quantify its reconstruction uncertainty. This work was funded by the Lawrence Livermore National Laboratory and the U.S. Department of Homeland Security, Science and Technology Directorate...

The Source - Washington University in St. Louis - Oct 6, 2023

NSF Awards Illinois Tech Researcher $1 Million for Pioneering Brain Imaging Research

...An Illinois Institute of Technology computer science researcher was awarded a $1 million grant from the National Science Foundation to develop new imaging, machine learning, and computer vision strategies to fully dissect the complex network of neurons in a fruit fly's entire brain. The project builds on recent advances in genetic, imaging, and computational methods to develop a unified framework for reliable reconstruction of genetically identified fruit fly brain neurons and their connections at single-neuron resolution

from 3D image data...
Chicago-Kent College of Law - Oct 9, 2023

Other IT Related

A Proclamation on Indigenous Peoples' Day, 2023

... On Indigenous Peoples' Day, we honor the perseverance and courage of Indigenous peoples, show our gratitude for the myriad contributions they have made to our world, and renew our commitment to respect Tribal sovereignty and self-determination. Indigenous peoples are a beacon of resilience, strength, and perseverance as well as a source of incredible contributions. Indigenous peoples and Tribal Nations continue to practice their cultures, remember their heritages, and pass down their histories from generation to generation. They steward this country's lands and waters and grow crops that feed all of us. They serve in the United States military at a higher rate than any other ethnic group. They challenge all of us to celebrate the good, confront the bad, and tell the whole truth of our history. And as innovators, educators, engineers, scientists, artists, and leaders in every sector of society, Indigenous peoples contribute to our shared prosperity...
The White House - Oct 6, 2023

Readout of the Nanotechnology Infrastructure Leaders Summit

...The Biden-Harris Administration is working to leverage the power of science and technology, including nanotechnology, to benefit all Americans. For example, nanoparticles called quantum dots – the subject of the recent Nobel Prize in Chemistry 2023 – have been developed over the decades with support from the National Nanotechnology Initiative (NNI) and now enable modern TVs, LED lamps, and surgical tools. The White House Office of Science and Technology Policy (OSTP) and the National Nanotechnology Coordination Office (NNCO) convened a first-of-its-kind Nanotechnology Infrastructure Leaders Summit. The meeting participants discussed creating a more seamless national network and streamlining the pipeline from discovery to commercialization...
The White House - Oct 6, 2023

NSF-funded researchers design a national testing facility to simulate tornadoes, downbursts and gusts

...Partha Sarkar and a research team he's leading have just won a four-year, $14 million grant from the U.S. National Science Foundation to design and plan a National Testing Facility for Enhancing Wind Resiliency of Infrastructure in Tornado-Downburst-Gust Front Events, or NEWRITE. The facility would allow testing at large-scales and high wind speeds in simulated windstorms. The grant will also support replacing Iowa State's Tornado/Microburst Simulator that was completed in 2005. The existing simulator, housed in Howe Hall, is capable of 80 mph winds and a tornado-like vortex that's 3.7 feet in diameter. The new simulator will be about a 1/20th-scale model of the full-scale NEWRITE and about the same size as the existing facility. Researchers will also model and produce a "digital twin" of the full-scale and 1/20th-scale NEWRITE simulators to help them design the proposed facility...
Iowa State University News Service - Oct 4, 2023

STEM / Workforce & IT

FACT SHEET: To Launch Investing in America Tour, the Biden-Harris Administration Kicks off Sprint to Catalyze Workforce Development Efforts for Advanced Manufacturing Jobs and Careers

...The Biden-Harris Administration is hosting a White House convening to officially kick off its Advanced Manufacturing Workforce Sprint—an intensive drive to build a diverse, skilled pipeline of workers for good jobs, including union jobs, in advanced manufacturing. The nationwide sprint is bringing together employers, unions, education and training providers, community-based groups, philanthropic organizations, and state and local governments to take concrete steps to help more Americans train for and succeed in this growing field. The Advanced Manufacturing Sprint will continue beyond the Investing in America tour and through the end of 2023. The Department of Labor is announcing an Advanced Manufacturing Registered Apprenticeship Accelerator Series that will support hundreds of employers to speed the development and launch of Registered Apprenticeship programs in high-demand occupations. The National Science Foundation (NSF) and DOL will work together to ensure the incorporation of equity, job quality, and worker empowerment in advanced manufacturing research and workforce development programs across the federal government...
The White House - Oct 6, 2023

Building the Future Workforce on Manufacturing Day

...Manufacturing Day (MFG Day) showcases the various career opportunities in the manufacturing industry. Organizations showed the public what manufacturing really looks like through more than 3,000 events in all 50 states and Puerto Rico. The MEP National Network participates in MFG Day by hosting, coordinating and promoting events. MFG Day isn't the only day of the year for learning about manufacturing careers. Look for internships or apprenticeship programs offered by manufacturing companies. These opportunities provide hands-on experience and a chance to see what the daily work is like. Attend manufacturing trade shows, job fairs and industry-specific events in your area. These events often feature exhibits, workshops and networking opportunities. Talk to career or guidance counselors who can provide information on manufacturing careers and help you make informed decisions. Use online resources, such as websites, forums and social media platforms to connect with professionals working in the manufacturing field...
National Institute of Standards and Technology - Oct 6, 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
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