HPC	ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	ROBOTICS / AUTONOMOUS VEHICLES	QUANTUM	CYBERSECURITY / PRIVACY	INFORMATION INTEGRITY RESEARCH & DEVELOPMENT	5G, WIRELESS SPECTRUM, NETWORKING & COMMUNICATIONS	MICROELECTRONICS	CLIMATE CHANGE / GREEN ENERGY & IT	DIGITAL HEALTH	OTHER IT RELATED	STEM / WORKFORCE & IT	STEM / WORKFORCE RESOURCES & OPPORTUNITIES	UPCOMING CONFERENCES / WORKSHOPS / WEBINARS	FEDERAL REGISTER: REQUEST FOR INFORMATION (RFI)

NITRD News Brief

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

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

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

HPC

DARPA's SafeDocs Creates Safer Documents for Safer Computing
...Documents containing malicious constructs are a leading cause of data breaches in the government and private sectors. Researchers with DARPA's Safe Documents (SafeDocs) program have developed new methods and tools that allow people to confidently open documents and trust what they see on their screens. Kicking off in 2018, SafeDocs began with a goal to improve the security of electronic communication, particularly in sensitive or critical applications such as military or government operations. Since then, SafeDocs research and development have reduced the complexity of documents' formats, which are the rules that documents must obey so that software can open them. In addition, teams radically improved software's ability to reject invalid and malicious data without impacting the core functionality of new and existing electronic data formats. SafeDocs tools have also helped preserve electronic document history and keep feature-rich electronic documents viable...
DARPA - Jun 15, 2023

NNSA-supported interdisciplinary center finds the art of computation with supercomputers
...Data from laboratory experiments at the University of Illinois Urbana-Champaign inform computationalists who, in turn, write complex equations that require a supercomputer

to solve. The simulations they do require some of the largest computers in the world and help predict conditions that are unachievable in a lab. One of the questions being tackled by experiments and simulation is about how carbon oxidizes at different pressures, temperatures, gas environments. We learn which experimental configuration and data are most suitable for model validation and how simulations can best represent experimental conditions. Another one of the experiments in the center is testing a thermal protective materials made with carbon fibers. It is coated with a lightweight material designed to evaporate and protect the surface of a vehicle under supersonic conditions. ... The Center for Exascale-enabled Scramjet Design is in its third year of a five-year project funded by the Department of Energy. It is supported by National Nuclear Security Administration...
News Bureau - Jun 15, 2023

Artificial Intelligence / Machine Learning

DOD Committed to Ethical Use of Artificial Intelligence
...Michael C. Horowitz, the director of the emerging capabilities policy office in the office of the undersecretary of defense for policy, underscored the U.S.' commitment to leading the international conversation surrounding artificial intelligence. Underpinning this commitment, Horowitz said, is a comprehensive set of policy decisions within DOD that governs the development and fielding of autonomous weapon systems, ethical artificial intelligence strategy, and the development of responsible artificial intelligence strategy and pathways. U.S. leadership, in codifying these principles, is now driving responsible artificial intelligence policy formulation among international partners...
U.S. Department of Defense - Jun 15, 2023

DHS S&T Awards Funds to Birmingham, AL Startup Developing Object Detection & Tracking Algorithms for Securing Soft Targets
...The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) announced an award of $199,500 to Analytical AI, a Birmingham, AL-based company, to build artificial intelligence algorithms that link objects, such as unattended baggage to people, and track them from the time they enter a perimeter to when they exit. Under its Securing Soft Targets solicitation, S&T's Silicon Valley Innovation Program (SVIP) sought solutions that automatically detect anomalous events via video camera feeds; reduce error to optimize human performance; and minimize delay to enhance responsiveness in threat situations that could serve a shared mission among schools, sports venues, transportation systems, shopping venues, places of worship and amidst the general public...
Homeland Security - Jun 15, 2023

Robotics / Autonomous Vehicles

AFRL-funded engineer looks to transform manufacturing of unmanned aerial vehicles
...A University of Texas at Arlington researcher is leading a project to bring automation to smaller composite manufacturing for unmanned aerial vehicles (UAVs) and urban air mobility (UAMs) vehicles. Paul Davidson, a UT Arlington assistant professor in the Department of Mechanical and Aerospace Engineering (MAE), is leading the $249,770 Air Force Research Laboratory-funded project. Davidson said most composite manufacturing for larger aircraft is performed with automated robotic manufacturing. But similar automation is difficult on smaller UAV or UAM vehicles because of their complex shapes and high curvatures...
The University of Texas at Arlington - Jun 15, 2023

Quantum

UNM Physics and Astronomy awarded DOD $800,000 grant for quantum eraser research project
...UNM Department of Physics & Astronomy Associate Professor Francisco Elohim Becerra was recently awarded an $800,000 research grant for a research project titled, "Nonclassical atomic spin ensembles based on coherent feedback and quantum eraser." This is a Department of Defense Research and Education Program for Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI) Grant. This grant allows us to study fundamental questions about the interaction of light and matter, and further our understanding of the capabilities of atomic systems for building metrological technologies with performances that go beyond conventional sensors. For UNM, this grant will enhance capacity in quantum information sciences...
UNM Newsroom - Jun 17, 2023

Cybersecurity / Privacy

NSF announces guidelines for agency research security analytics practice
...The U.S. National Science Foundation recently released guidelines for research security analytics. Research security, defined as safeguarding of the U.S. enterprise against the misappropriation of research and development, has received increased attention due to emerging competition and conflicting practices by competing economies. NSF is a leading advocate for an open, inclusive research enterprise that welcomes the contributions of international scientists to further U.S. science. The guidelines are one of several NSF activities demonstrating that the principles of open science can align with research security standards and reflect a fruitful dialogue between the federal government and the research community on appropriate mechanisms for ensuring transparent reporting of research commitments...
National Science Foundation - Jun 20, 2023

NSA and CISA Release Guide To Protect Baseboard Management Controllers
...Baseboard management controllers (BMCs) are common components of server-class computers. Malicious cyber actors could use these controllers' capabilities to compromise industry and government systems. Organizations need to take action to secure servers with BMCs. To assist network defenders in this, NSA and the Cybersecurity and Infrastructure Security Agency (CISA) jointly released the Cybersecurity Information Sheet, "Harden Baseboard Management Controllers." The guidance includes recommendations and mitigations for network defenders to secure their systems. A BMC is an embedded component that runs independent of the server's operating system (OS). Once powered up, a BMC's capabilities persist even if the server is shut down. BMC enterprise management solutions allow administrators to handle large numbers of servers remotely. Cyber actors can abuse these capabilities in a variety of ways...
National Security Agency/Central Security Service - Jun 15, 2023

Information Integrity Research & Development

Voices from DARPA Podcast Episode 69: Demystifying Deepfakes
...The threat of manipulated media –audio, images, video, and text – has increased while social media provides a ripe environment for viral content sharing. In the episode of Voices from DARPA, Dr. Wil Corvey, program manager for DARPA's Semantic Forensics (SemaFor), discusses how the program goes beyond detection to delve deeper into understanding the intent behind manipulated media and how the SemaFor team is creating tools available for today's analysts...
DARPA - Jun 16, 2023

5G, Wireless Spectrum, Networking & Communications

NIST Lays Groundwork for Future Ultra-Precise Timing Links to Geosynchronous Satellites
...Last year, scientists demonstrated a capability long sought by physicists: transmitting extremely precise time signals through the air between far-flung locations at powers that are compatible with future space-based missions. The results, obtained by a team including scientists from the National Institute of Standards and Technology (NIST), could enable time transfer from the ground to satellites 36,000 kilometers away in geosynchronous orbit, where they hang stationary above a point on the Earth's surface. The method would permit this time synchronization with femtosecond precision — 10,000 times better than the existing state-of-the-art satellite approaches. It also would allow for successful synchronization using the bare minimum timing signal strength, which would make the system highly robust in the face of atmospheric disturbances...
National Institute of Standards and Technology - Jun 21, 2023

New Tiny Atomic Beam Clock Could Bring Stable Timing to Places GPS Can't Reach
...Researchers at the National Institute of Standards and Technology (NIST), in collaboration with researchers from Georgia Tech, have made the first-of-its-kind chip-scale beam clock - a new type of miniature atomic clock that could provide better timing over the span of weeks and months compared with current systems. NIST has been using atomic beams for timekeeping since the 1950s. For decades, beam clocks were used to keep the primary standard for the second, and they are still part of NIST's national timekeeping ensemble. Beam clocks are precise, stable and accurate, but they're currently not the most portable. The vacuum chamber for NIST-7, the last beam clock used for

the primary frequency standard in the U.S., was more than 2.5 meters or 8 feet long. Using microfabrication techniques learned from the chip-scale atomic clocks (CSACs). The group fabricated a chip-scale atomic beam device using a stack of etched silicon and glass layers. This device is a highly miniaturized version of the chambers that have been used in atomic beam clocks like NIST-7 and is about the size of a postage stamp. Atomic vapor cell construction techniques developed at NIST and etched microcapillary arrays developed at Georgia Tech were key to shrinking the vacuum chambers of larger beam clocks. NIST has set up a collaboration with HRL Laboratories, CU Boulder and Virginia Tech to explore how small a clock based on this technology could be built...
National Institute of Standards and Technology - Jun 21, 2023

NASA-Funded Study Uses Satellite Data to Reveal Global Reservoirs Are Becoming Emptier
...Over the past two decades, global reservoirs have become increasingly empty despite an overall increase in total storage capacity due to the construction of new reservoirs. Researchers used a new approach with satellite data to estimate the storage variations of 7,245 global reservoirs from 1999 to 2018. Global reservoir storage increased at an annual rate of 28 cubic kilometers, attributed to the construction of new reservoirs. However, despite these efforts, the data reveals that the rate of reservoir filling is lower than anticipated. ... This research is funded by NASA...
Texas A&M Today - Jun 16, 2023

Microelectronics

CHIPS for America Announces Selection Committee for the Board of Trustees of the National Semiconductor Technology Center
...The CHIPS for America team at the U.S. Department of Commerce announced leaders to serve on a selection committee that will choose board members to form a nonprofit entity that the department anticipates will serve as the operator of the National Semiconductor Technology Center (NSTC), a centerpiece of the bipartisan CHIPS and Science Act's research and development (R&D) program. "The NSTC is the cornerstone of the CHIPS R&D program and is critical to the long-term success of the American semiconductor industry and our national and economic security goals," said Secretary of Commerce Gina Raimondo. "We want the NSTC to be an engine of innovation, supporting and extending U.S. leadership in semiconductor research, design, engineering and advanced manufacturing for decades to come. This selection committee is the next step to helping us stand up the NSTC and ensure it succeeds for generations." ...
National Institute of Standards and Technology - Jun 20, 2023

Climate Change / Green Energy & IT

FACT SHEET: Biden-Harris Administration Makes Historic Investments to Build Community Climate Resilience
...Through the President's historic Investing in America agenda, the National Oceanic and Atmospheric Administration (NOAA) will launch a first-ever $575 million Climate Resilience Regional Challenge to help coastal and Great Lakes communities, including Tribal communities in those regions, become more resilient to extreme weather and other impacts of the climate crisis. The funding will support innovative coastal resilience and adaptation solutions. The Challenge is part of the $2.6 billion in resilience funding for NOAA included in the Inflation Reduction Act, and is part of the President's Justice40 Initiative. The Bipartisan Infrastructure Law is investing $2.3 billion in states, Territories, Tribes, and the District of Columbia over the next five years to bolster grid resilience across the country. The President announced that later this year, he will bring together state, local, Tribal, and Territorial leaders – who are managing the lived impacts of climate change every day – for a White House Summit on Building Climate Resilient Communities. As part of the Summit, the Biden-Harris Administration will release a new National Climate Resilience Framework designed to advance U.S. Government actions, in alignment with non-Federal efforts, towards a shared vision of a climate-resilient nation...
The White House - Jun 19, 2023

Digital Health

President Biden Announces Intent to Appoint Dr. Mandy Cohen as Director of the Centers for Disease Control and Prevention
...President Biden announced his intent to appoint Dr. Mandy Cohen as Director of the Centers for Disease Control and Prevention. As Secretary of North Carolina's Department of Health and Human Services, Dr. Cohen developed innovative and nationally recognized programs that improved the health and lives of families across the state. Her

leadership through the COVID-19 crisis drew bipartisan praise, as did her successful transformation of North Carolina's Medicaid program and pivotal role in the bipartisan passage of Medicaid expansion...
The White House - Jun 16, 2023

Silicon nose: Small sensor 'smells' incipient seizures

...In people with epilepsy, seizure-alert dogs can smell small changes in body chemistry and warn of an impending seizure an hour or more before it occurs. Inspired by this feat of nature, a team of researchers has sniffed out a way to replicate the ability with technology. Sandia National Laboratories and research partner Know Biological have developed a miniaturized sensor system that can detect the specific gases released from the skin of people with epilepsy before a seizure. Researchers wanted to know how seizure-alert dogs knew when a seizure was imminent. They identified the presence of several key volatile organic compounds, gases responsible for everything from the smell of fresh-cut grass to the odor of drying nail polish. They discovered that seizure-alert dogs know when a seizure is imminent because they smell the change in body chemistry. The first Sandia-made microdevice serves as a "sponge" to soak up gases. The sponge or pre-concentrator, a silicon-based device slightly smaller than the inner loop of a mini-paper clip, collects VOCs from a bit of gauze that had been on a patient's skin and holds onto them, letting the much smaller gases that make up air, such as oxygen, nitrogen and argon, flow through. After collecting gases from the gauze sample, the pre-concentrator is rapidly heated. The heat effectively "wrings" out the sponge, sending the VOCs into the next stage of the sensor. ... The team also designed the micro-control board that controls the various components in the silicon-based seizure gas detection sensor.
Sandia National Laboratories - Jun 20, 2023

NIH/NSF-funded scientists use Argonne supercomputer to detail HIV protein mechanism crucial for drug development

...Researchers at the University of Illinois Chicago (UIC) have used the Theta supercomputer at the U.S. Department of Energy's (DOE) Argonne National Laboratory to find the essential factors that control a certain structural change of HIV protease, a key viral protein. The structural change is called a flap opening, and it occurs when the virus is binding to another molecule, like an antiviral drug. Understanding this structure change is critical for drug development. In the research, Ao Ma and his students performed molecular dynamics simulations on Theta to collect data that they then analyzed using a mathematical method. ... The work was funded by the National Institutes of Health and the National Science Foundation.
Argonne National Laboratory - Jun 19, 2023

NIH-funded MIT engineers develop a soft, printable, metal-free electrode

...Nearly all implants incorporate electrodes — small conductive elements that attach directly to target tissues to electrically stimulate muscles and nerves. Implantable electrodes are predominantly made from rigid metals that are electrically conductive by nature. But over time, metals can aggravate tissues, causing scarring and inflammation that in turn can degrade an implant's performance. MIT engineers have developed a metal-free, Jell-O-like material that is as soft and tough as biological tissue and can conduct electricity similarly to conventional metals. The material can be made into a printable ink, which the researchers patterned into flexible, rubbery electrodes. The new material, which is a type of high-performance conducting polymer hydrogel, may one day replace metals as functional, gel-based electrodes, with the look and feel of biological tissue. ... This research is supported, in part, by the National Institutes of Health.
MIT News - Jun 15, 2023

Other IT Related

UConn Researchers Join NASA-Funded International Biodiversity Monitoring Project

...A team of ecologists are taking part in a massive NASA-funded international project aimed at helping scientists understand and mitigate the rapid loss of biodiversity due to climate change, development, and other threats associated with human activity. BioSCape, a collaboration between NASA and the South African National Space Agency (SANSA), will employ airborne imaging technology and field observations to survey South Africa's Greater Cape Floristic Region (GCFR), home to two global biodiversity hotspots rich with flora and marine species found nowhere else on Earth. The researchers will use four kinds of airborne sensors to collect full-spectrum imaging spectroscopy, and laser image detection and ranging (LIDAR) data, from planes flown over land and water. They will interpret data produced by the high-resolution, color-recording imaging technique known as hyperspectral imaging. ... BioSCape is NASA's first ever biodiversity field program combining airborne spectroscopy, LIDAR, and field observations across the GCFR. The project is being driven on the American side by the Earth Science Division (ESD) of NASA's Science Mission Directorate. ESD missions focus on better understanding Earth's interconnected systems using observations from satellites, the International Space Station, airplanes, balloons, ships and on land to collect data ranging from ocean currents and temperatures to land use and vegetation...
UConn Today - Jun 21, 2023

STEM / Workforce & IT

NSF, AACC announce 2023 Community College Innovation Challenge winners

...This week, 12 community colleges selected as finalists in a national competition attended an innovation boot camp where they learned from entrepreneurs and experts in business planning, stakeholder engagement, strategic communication and marketplace dynamics. The boot camp culminated in a student innovation poster session with STEM leaders and congressional stakeholders, and a 5-minute pitch presentation to a panel of industry and entrepreneurial professionals determining the winning teams. The U.S. National Science Foundation, in partnership with the American Association of Community Colleges announced the three winning teams of this year's Community College Innovation Challenge. A team of expert judges selected the Houston Community College as the first-place winner, followed by the Woodland Community College team in second place and the Feather River College team in third place. The annual competition seeks to strengthen entrepreneurial thinking among community college students by challenging them to develop STEM-based solutions to real-world problems...
National Science Foundation - Jun 15, 2023

Science Strengthens Its Stride: DHS Welcome HS-POWER Interns

...The Science and Technology Directorate (S&T) believes in fostering a diverse and inclusive community of rising professionals who are passionate about homeland security and research, and we do this through several OUP workforce development initiatives, including our Homeland Security Professional Opportunities for the Student Workforce to Experience Research (HS-POWER) internship program. HS-POWER is a 10-week internship program geared toward undergraduate and graduate students in the science, technology, engineering, and mathematics (STEM) fields. The program aims to foster lasting relationships between students, researchers, DHS personnel, and research facilities that will ultimately cultivate the next generation of educated and skilled STEM professionals. Previous interns' projects focused on mission areas including cybersecurity, next-generation explosive trace detection, international partnerships, and more. Students have the opportunity to work with DHS components, federal research laboratories, and other HS-STEM-focused entities nationwide, either onsite or in a virtual environment. This summer, OUP is sponsoring 97 enthusiastic HS-POWER interns across DHS components, including the Cybersecurity and Infrastructure Security Agency, the Transportation Security Administration, and the U.S. Coast Guard...
Homeland Security - Jun 16, 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 - Jun 21, 2023

FEDERAL HIGH END COMPUTING INFORMATION PORTAL

...Networking and Information Technology Research and Development (NITRD) has a portal that provides information about U.S. Federal government high performance computing activities, including available computing resources; HEC relevant publications; fellowship and training opportunities; and technology transfer, licensing, and industry engagement opportunities. The HEC IWG (Interagency Working Group on High End Computing) agencies provide the information contained in this portal. HEC IWG agencies are involved in various Federal activities in the HEC area including R&D and providing infrastructure and application. Take a look at it!
Networking and Information Technology Research and Development - Jun 14, 2023

Upcoming Conferences / Workshops / Webinars

Smithsonian National Education Summit: July 18-20, 2023

...Welcome to your Smithsonian and the 2023 Smithsonian National Education Summit, Together We Thrive: Fostering a Sense of Belonging. Our Summit theme, "Together We Thrive" stems from an emerging body of research in the Science of Learning and Development that validates an optimistic outlook about the potential of all learners. The research tells us that all students can thrive across all disciplines, provided they have the right circumstances, contexts, and support. A panel of students will share their own personal learning journeys, discuss their experiences with Smithsonian programs, and provide insights into the types of intentionally designed learning environments that can foster empowering, culturally-affirming, transformative, and personalized experiences. Smithsonian National Education Summit is a free, three-day professional learning opportunity July 19 - 20, 2023. This annual education conference offers in-person workshops at the Smithsonian in Washington D.C., as well as online-specific sessions. PreK-12 educators, librarians, media specialists, and policymakers nationwide are invited to participate in sessions exploring four distinct tracks: (1) Life on a sustainable Planet (2) STEAM Education (3) Reckoning with Our Racial Past (4) An Integrated Arts Education...
Smithsonian - Jun 12, 2023

Federal Register: Request for Information (RFI)

Request for Information: National Priorities for Artificial Intelligence
...The Biden-Harris Administration is developing a National Artificial Intelligence (AI) Strategy that will chart a path for the United States to harness the benefits and mitigate the risks of AI. This strategy will build on the actions that the Federal Government has already taken to responsibly advance the development and use of AI. To inform this strategy, OSTP requests public comments to help update U.S. national priorities and future actions on AI. Comments must be submitted via the Federal eRulemaking Portal at regulations.gov. Interested individuals and organizations are invited to submit comments by 5:00 p.m. ET on July 7, 2023...
The White House - May 24, 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.