



NITRD NEWS	FEDERAL AGENCY FUNDING OPPORTUNITIES	HPC	ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	ROBOTICS / AUTONOMOUS VEHICLES	QUANTUM	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	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](mailto:nco@nitrd.gov) and voilà they will receive the news brief with the cool technology articles each week!

## NITRD News

### NATIONAL ARTIFICIAL INTELLIGENCE RESEARCH AND DEVELOPMENT STRATEGIC PLAN 2023 UPDATE

...The federal government must place people and communities at the center by investing in responsible R&D that serves the public good, protects people's rights and safety, and advances democratic values. This update to the National AI R&D Strategic Plan is a roadmap for driving progress toward that goal. This plan defines the major research challenges in AI to coordinate and focus federal R&D investments. It will ensure continued U.S. leadership in the development and use of trustworthy AI systems, prepare the current and future U.S. workforce for the integration of AI systems across all sectors, and coordinate ongoing AI activities across all federal agencies. This plan, which follows national AI R&D strategic plans issued in 2016 and 2019, reaffirms eight strategies and adds a ninth to underscore a principled and coordinated approach to international collaboration in AI research...

NITRD - May 23, 2023

## Federal Agency Funding Opportunities

### **DOE Announces \$187 Million to Ensure Widespread And Accelerated Electrification of America's Transportation Sector**

...The U.S. Department of Energy (DOE) today announced a new \$99.5 million funding opportunity in addition to the selection of 45 projects totaling \$87 million to advance production of next-generation electric vehicle (EV) technologies, train the future electrified transportation workforce, and ensure the equitable deployment of clean mobility options in disadvantaged communities. In support of the U.S. National Blueprint for Transportation Decarbonization, projects funded by this \$87 million funding opportunity will drive innovation in technology and materials development for EVs; create new concepts to lower emissions associated with off-road vehicles, rail and maritime transportation; and develop novel solutions to deploying clean mobility options in underserved communities. ... Applicants must submit a concept paper by June 26, 2023, and full applications are due on August 11, 2023.

Department of Energy - May 19, 2023

### **AFRL calls for proposals to accelerate smart medical technology innovations**

...The Nano-Bio Materials Consortium, or NBMC, led by the Air Force Research Laboratory, or AFRL, in partnership with Semiconductor Equipment Materials International, or SEMI, has publicly released a request for proposals for dual-use projects designed to accelerate innovations, also known as Smart MedTech. Smart MedTech encompasses the field of human performance monitoring and augmentation and is one of four initiatives chosen as key drivers of electronics development and market growth by SEMI, representing the electronics manufacturing and design supply chain. In the first stage, proposals, also known as white papers, are to be submitted no later than by June 5, 2023, at 5 p.m. PDT. In the second stage, the authors of selected white papers will be invited to submit full proposals by Aug. 18, 2023...

Air Force Materiel Command - May 17, 2023

### **Biden-Harris Administration Announces Availability of \$500 Million for Improved Regional Conservation Partnership Program to Better Support Partners, Producers as Part of Investing in America Agenda**

...The Biden-Harris Administration today announced the availability of \$500 million in funding to advance partner-driven solutions to conservation on agricultural land through the U.S. Department of Agriculture's Regional Conservation Partnership Program (RCPP). RCPP leverages a voluntary approach to conservation that expands the reach of conservation efforts and climate-smart agriculture through public-private partnerships. The improvements included in this year's RCPP funding opportunity are part of an ongoing effort to streamline NRCS conservation programs and efficiently implement the Inflation Reduction Act. The application period is now open for RCPP Classic and RCPP Alternative Funding Arrangements (AFA). RCPP Classic projects are implemented using NRCS contracts and easements with producers, landowners and communities, in collaboration with project partners. Through RCPP AFA, the lead partner must work directly with agricultural producers to support the development of new conservation structures and approaches that would not otherwise be available under RCPP Classic. NRCS will accept applications now through Aug. 18, 2023 via the RCPP portal...

USDA APHIS - May 19, 2023

## HPC

### **Math Primes High-Performance Computing for the Age of AI**

...An increase in congestion on high-performance computing (HPC) systems from more complex workloads, such as training artificial intelligence (AI) models, are to blame for the HPC bottlenecks. HPC system bottlenecks are more common today than they were when the systems were designed, as Sinan Aksoy, team leader at PNNL, and his colleagues Roberto Gioiosa, a computer scientist in the HPC group at PNNL, and Stephen Young, a mathematician in the math group at PNNL, explain. That's because the way people use HPC systems today is different than the way they did when the systems were developed. We didn't have Facebook 20 years ago, we didn't have this big data, we didn't have big AI models, we didn't have ChatGPT. Traditional HPC network topologies are optimized for physics simulations of things such as the interactions between molecules or regional climate systems, not modern AI workloads. To overcome HPC bottlenecks, the research team at PNNL proposed using graph theory, a mathematical field that explores relationships and connections between a number, or cluster, of points in a space. Their network, called SpectralFly, exhibits perfect mathematical symmetry – every node is connected to the same number of other nodes, and the connections from each node look the same throughout the network. The options to get from one node to another—with each option identical to any node in the network—also mean it's easier for computer programmers to route information through the network...

Pacific Northwest National Laboratory (PNNL) - May 23, 2023

## Artificial Intelligence / Machine Learning

### **FACT SHEET: Biden-Harris Administration Takes New Steps to Advance Responsible Artificial Intelligence Research, Development, and Deployment**

...The Biden-Harris Administration is announcing new efforts that will advance the research, development, and deployment of responsible artificial intelligence (AI) that protects individuals' rights and safety and delivers results for the American people. The Administration has taken significant action to promote responsible AI innovation that places people, communities, and the public good at the center, and manages risks to individuals and our society, security, and economy. Today's announcements include: An updated roadmap to focus federal investments in AI research and development (R&D): The White House Office of Science and Technology Policy (OSTP) is releasing a National AI R&D Strategic Plan—updated for the first time since 2019—a roadmap that outlines key priorities and goals for federal investments in AI R&D...

The White House - May 23, 2023

### **EEOC Releases New Resource on Artificial Intelligence and Title VII**

...The Equal Employment Opportunity Commission (EEOC) released a technical assistance document, "Assessing Adverse Impact in Software, Algorithms, and Artificial Intelligence Used in Employment Selection Procedures Under Title VII of the Civil Rights Act of 1964," which is focused on preventing discrimination against job seekers and workers. Employers increasingly use automated systems, including those with AI, to help them with a wide range of employment matters, such as selecting new employees, monitoring performance, and determining pay or promotions. The EEOC's new technical assistance document discusses adverse impact, a key civil rights concept, to help employers prevent the use of AI from leading to discrimination in the workplace. The EEOC's technical assistance document is part of its Artificial Intelligence and Algorithmic Fairness Initiative, which works to ensure that software—including AI—used in hiring and other employment decisions complies with the federal civil rights laws.

The U.S. Equal Employment Opportunity Commission - May 18, 2023

### **NASA-funded start-up showing how AI is making weather forecasts more accurate**

...Thomas Vandal and Kate Duffy worked as NASA scientists after earning doctoral degrees. They intend to improve on short-term forecasting with a new startup that uses AI and machine learning to predict weather patterns. The startup, Zeus AI, draws on the enormous amount of data provided by the latest generation of government satellites— atmospheric winds, water vapors, temperature changes and cloud cover that influence weather across the globe. They recently obtained Small Business Innovation Research phase II funding from NASA to launch their startup. Vandal and Duffy estimate that the Zeus AI model can generate more accurate forecasts faster than U.S. government models such as the High-Resolution Rapid Refresh by the National Oceanic and Atmospheric Administration. But don't expect Zeus to be used on favorite news weather stations any time soon. The intended clients of the new startup include energy markets and energy traders, and the daily pricing of energy based on demands for things such as air conditioning and heating materials. More accurate weather models can also help with green energy efforts by predicting how weather conditions are impacting solar and wind production, so there is less reliance on thermal energy storage as a backup...

Northeastern News - May 18, 2023

## Robotics / Autonomous Vehicles

### **AFRL conducts swarm technology demonstration**

...The Air Force Research Laboratory conducted a demonstration of its high-power microwave counter drone weapon, the Tactical High-power Operational Responder (THOR) as it engaged a swarm of multiple targets. THOR has never been tested against these types of drones before, but this did not stop the system from dropping the targets out of the sky with its non-kinetic, speed-of-light High-Power Microwave, or HPM pulses. THOR was exceptionally effective at disabling the swarm with its wide beam, high peak powers and fast-moving gimbal to track and disable the targets...

Air Force Materiel Command - May 17, 2023

### **Drones Fly Low and Slow for Radiation Detection**

...Unoccupied aerial vehicles, better known as drones, have rapidly advanced from a quirky, high-flying novelty to a versatile workhorse. They are tools for search and rescue, traffic monitoring, weather monitoring, and perhaps even package hauling. Pacific Northwest National Laboratory researchers found that drones have potential to conduct decommissioning radiological surveys, but further research is needed before the devices are approved for decommissioning purposes. Decommissioning surveys are conducted at former nuclear power plants and at former buildings or sites where radiological materials were present to demonstrate that a site is in compliance with regulations and can be

released for alternative uses. In the study to assess drones for radiological detection, compared the ability of a flying drone carrying radiological survey equipment with the same survey equipment secured to a rolling cart. The NRC's mission is to protect public health and the environment and this work by PNNL advances this mission and makes the use of drone technology possible for these applications...

Pacific Northwest National Laboratory (PNNL) - May 18, 2023

## Quantum

### **NSF & DOE CAREER Awards Foster Quantum Material Research Program**

...Physicist Jin Hu has been awarded a Faculty Early Career Development (CAREER) \$579,527 award from the National Science Foundation. Two years Hu received a \$750,000 CAREER Award from the U.S. Department of Energy. These CAREER awards support Hu's investigation of topological quantum materials. Topological quantum materials also display a kaleidoscope of novel properties with great promise for technology applications, such as very high mobility or zero energy loss during power transmission for energy-saving devices. Achieving switchable quantum phases is an important step toward the technological application of those emergent quantum materials and could open new research areas. The study of quantum materials is an important ingredient of the National Quantum Initiative. This national strategic direction is represented by large-scale research centers sponsored by federal agencies such as the NSF MonArk Quantum Foundry and the DOE's  $\mu$ -ATOMS EFRC...

News - University of Arkansas - May 19, 2023

### **Stretching metals allows researchers to create materials for quantum, electronic and spintronic applications**

...A University of Minnesota-led team has developed a first-of-its-kind, breakthrough method that makes it easier to create high-quality metal oxide thin films out of "stubborn" metals that have historically been difficult to synthesize in an atomically precise manner. This research paves the way for scientists to develop better materials for various next-generation applications including quantum computing, microelectronics, sensors and energy catalysis. "Stubborn" metals oxides, such as those based on ruthenium or iridium, play a crucial role in numerous applications in quantum information sciences and electronics. However, converting them into thin films has been a challenge for researchers due to the inherent difficulties in oxidizing metals using high-vacuum processes. The researchers stumbled upon a groundbreaking revelation that by incorporating a concept called "epitaxial strain"—effectively stretching the metals at the atomic level—significantly simplifies the oxidation process of these stubborn metals. ... This research was funded primarily by the United States Department of Energy (DOE) and the Air Force Office of Scientific Research (AFOSR)...

University of Minnesota Twin Cities - May 22, 2023

## Cybersecurity / Privacy

### **Fact Sheet: Biden-Harris Administration Announces Actions to Protect Youth Mental Health, Safety & Privacy Online**

...President Biden has made tackling the mental health crisis a top priority, and he continues to call on Congress to pass legislation that would strengthen protections for children's privacy, health and safety online. The Department of Health and Human Services will lead an interagency Task Force on Kids Online Health & Safety to advance the health, safety and privacy of minors online with particular attention to preventing and mitigating the adverse health effects of online platforms on minors. It will identify current and emerging risks of harm to minors associated with online platforms, as well as potential health benefits of using online platforms. The Task Force will review the status of existing industry efforts and technologies to promote the health and safety of children and teenagers vis-à-vis their online activities. The Task Force will include senior representatives from the ED, DOJ, DHS, FTC, NTIA, NIST, CDC, NIH, OSTP, and others...

The White House - May 23, 2023

### **#StopRansomware Guide Released by NSA and Partners**

...To guide network defenders in protecting against the rapidly evolving ransomware tactics of malicious cyber actors, the National Security Agency (NSA) and several partners are publicly releasing the "#StopRansomware Guide" Cybersecurity Information Sheet (CSI). The guidance was updated to include additional best practices and recommendations based on operational insight from CISA, MS-ISAC, NSA, and the Federal Bureau of Investigation (FBI). Additional guidance includes recommendations for preventing common initial infection vectors, cloud backups, and Zero Trust Architecture (ZTA). This report is part of the #StopRansomware effort initiated by CISA...

National Security Agency/Central Security Service - May 24, 2023

### **Pentagon Cyber Official Provides Progress Update on Zero Trust Strategy Roadmap**

...The Defense Department is on track to implement its zero trust cybersecurity framework by fiscal year 2027. DOD's deputy chief information officer credits partnerships with the private sector as a key enabler of the DOD's progress toward implementing the key capabilities identified in the roadmap. Once implemented, the zero trust framework will move the DOD beyond traditional network security methods with capabilities designed to reduce exposure to cyberattacks, enable risk management and data sharing and quickly contain and remediate adversary activities. With each step implementing the zero trust framework, the DOD becomes more secure...  
U.S. Department of Defense - May 18, 2023

### **CISA and ONCD Award Champions of the Fourth Annual President's Cup Cybersecurity Competition**

...The Cybersecurity and Infrastructure Security Agency (CISA) and Office of the National Cyber Director (ONCD) awarded the winners of the fourth annual President's Cup Cybersecurity Competition in a private ceremony at the White House. Led and hosted by CISA, the President's Cup presents competitors with a series of challenges designed around the National Initiative for Cybersecurity Education (NICE) Framework Work Roles to identify, recognize, and reward the best cybersecurity talent across the federal workforce. The President's Cup Cybersecurity Competition recognizes the very best and brightest of the federal government. The President's Cup Cybersecurity Competition is open to the federal civilian workforce and members of the military. ...  
CISA - May 18, 2023

## **5G, Wireless Spectrum, Networking & Communications**

### **Quad Leaders' Summit Fact Sheet**

...The Quad is committed to supporting the region's development, stability, and prosperity to benefit the people of the Indo-Pacific. The leaders' ambitious efforts include major initiatives on infrastructure, maritime security, public-private partnership, climate, health, critical and emerging technologies, and space. The leaders welcome the launch of three major infrastructure initiatives to provide training, capacity, and resources to improve ongoing and future infrastructure projects. The Quad Infrastructure Fellowship will improve capacity and deepen professional networks across the region to design, manage, and attract investment in infrastructure projects. The Quad Partnership for Cable Connectivity and Resilience will improve access to develop trusted and secure cable systems and establish better internet connectivity and resiliency in the Indo-Pacific. As technology evolves, the Quad is committed to ensuring that it is leading the innovations of the future. The Open RAN Security Report demonstrates that Open RAN offers important cybersecurity advantages, that risks sometimes attributed to Open RAN are common to traditional RAN deployments as well, and that these risks can be mitigated and managed. By collaborating on cutting edge research and innovations in areas such as AI, robotics, communications, and sensing, and disseminating research findings, Advancing Innovation to Empower Nextgen Agriculture (AI-ENGAGE) can transform agricultural approaches to empower farmers throughout the Indo-Pacific region and the world...  
The White House - May 20, 2023

### **U.S. Naval Observatory: Providing precision time and location data for the DoD — and the entire world**

...The U.S. Naval Observatory (USNO) provides precise time and location data, which is used not only by other components of METOC and the Navy, but by the entire Department of Defense (DoD) — and the entire world. The Observatory, founded in 1830 in Washington D.C. as the Naval Depot of Charts and Instruments, was established to ensure the proper function of all the Navy's navigation equipment, notably chronometers. Today, the USNO continues to provide time and positioning information, and the instruments the facility uses — descendants of its earliest telescopes and chronometers — are the most advanced and precise in the world. The U.S. Naval Academy continues to teach celestial navigation, and the Navy considers it a backup form of navigation on ships. GPS, or Global Positioning System, relies on the USNO's time calculations to function. The foundational process of GPS is called multilateration, in which precise distance measurements from each of three or more orbiting satellites to a position on the surface of the planet gives a precise coordinate for that position. With the speed of light known, distances are calculated by time-of-travel from each satellite to the position in question, hence the importance of precision time. Called the Department of Defense Master Clock, the USNO system that coordinates this process is an ensemble of more than 100 specialized atomic clocks. Atomic clocks rely on counting oscillations of the single valence electron of certain atoms. Each GPS satellite has a number of onboard atomic clocks, some that use cesium and some that use rubidium. Just as the USNO originally analyzed chronometers and noted any deviations from locally observed timing, personnel at the USNO today carefully check the onboard clocks on GPS satellites daily against the Master Clock, which has a precision of a few hundred picoseconds...  
Department of the Navy Chief Information Officer - May 21, 2023

## **Advanced Manufacturing**

### **Voices from DARPA Podcast Episode 68: Space Manufacturing**

...Imagine you are going to space. There is a long list of items and supplies you definitely will need, but there is an even longer list of things you might need, depending on how your mission progresses. Imagine instead that you pack only fermentation equipment, feedstocks, and a freezer full of microbes that each convert the feedstock into a different useful molecule, material, or product so you have everything you might need and can produce it on demand. Or what if you could enable a new paradigm where future space structures – that are much too large to launch on a rocket – are built off-Earth using materials and designs optimized for the space environment? This Voices from DARPA episode features discussions with Dr. Andy Detor, program manager in DARPA's Defense Sciences Office, as well as Dr. Anne Cheever, program manager in the Biological Technologies Office. Detor runs the Novel Orbital Moon Manufacturing, Materials, and Mass Efficient Design, or NOM4D program...  
DARPA - May 18, 2023

**Vanderbilt part of coalition awarded \$1 million NSF engine development award to advance sustainable manufacturing and supply chain innovation**  
...Vanderbilt University, in partnership with other institutions across Tennessee and Kentucky, has been awarded \$1 million from the U.S. National Science Foundation's Regional Innovation Engines. The Type-1 award provides two years of planning funding to help partners collaborate to create economic, societal and technological opportunities for their regions. It also sets them up to pursue an NSF Engine Type-2 award of up to \$160 million—the largest award ever offered by the NSF. The project will focus on the Southeastern Commerce Corridor, including the I-65 and I-75 thoroughfares and the high-growth centers of Nashville, Knoxville, Chattanooga, Louisville and Lexington that outline an Appalachian region in need of improved connectivity and economic resilience. “What is profoundly different about the NSF Engines program is its emphasis on use-inspired research and innovation,” said Vice Dean of Engineering Doug Adams, who will oversee research and development. “It's transformational to use the research capabilities of our region to address the real needs of these manufacturers to determine how we can advance next-generation, sustainable manufacturing approaches while lifting up the communities and workers throughout our region.” ...  
Vanderbilt University - May 18, 2023

## Microelectronics

### **FACT SHEET: Vice President Harris Advances the Biden-Harris Administration's Investing in America Agenda and Highlights Multi-Billion Dollar Semiconductor R&D Investments**

...The CHIPS and Science Act makes a historic \$53B federal investment to strengthen and revitalize the United States' position in semiconductor research, development, and manufacturing, and ensure America is at the forefront of industries of the future – including nanotechnology, clean energy, quantum computing, and artificial intelligence. The CHIPS and Science Act not only provides incentives for companies to invest in semiconductor manufacturing in the United States, but also includes historic investments in research and development programs to advance American innovation in semiconductors and other technologies, strengthen American supply chains, and advance America's national security and economic competitiveness. A map of major private sector investments announced during the Biden-Harris Administration can be found at [whitehouse.gov/invest](https://whitehouse.gov/invest). The Administration has achieved the following milestones with respect to CHIPS implementation: \* The Department of Defense's Microelectronics Commons program will support hardware prototyping, the transition of new technologies from lab-to-fab, and workforce training. \* The Department of Commerce launched the first funding opportunity for the \$39 billion in semiconductor manufacturing incentives provided in the Act. \* The Department of State announced its plans around the International Technology Security and Innovation Fund to support semiconductor supply chain security and diversification. \* The National Science Foundation is investing in the nation's semiconductor workforce through programs to support fundamental research, workforce training, and curriculum development...  
The White House - May 22, 2023

### **Joint Statement on the Launch of the North American Semiconductor Conference and North American Ministerial Committee on Economic Competitiveness**

...The United States, Mexico, and Canada organized the first North America Semiconductor Conference in Washington, D.C. with the support of the Semiconductor Industry Association and Arizona State University. The conference reflects a shared commitment by government, industry, and academia to work together to strengthen the resilience of the North American semiconductor supply chain. The United States, Mexico, and Canada also launched the North American Ministerial Committee on Economic Competitiveness (NAMCEC), fulfilling another commitment by our leaders at the North American Leaders' Summit. At the Semiconductor Conference, the governments of the United States, Canada and Mexico committed to grow the following areas of collaboration in partnership with academia and the private sector...  
The White House - May 24, 2023

### **NIST Team Demonstrates Novel Way to Convert Heat to Electricity**

...Researchers at the National Institute of Standards and Technology (NIST) have fabricated a novel device that could dramatically boost the conversion of heat into electricity. The new fabrication technique involves depositing hundreds of thousands of microscopic columns of gallium nitride atop a silicon wafer. Layers of silicon are then

removed from the underside of the wafer until only a thin sheet of the material remains. The interaction between the pillars and the silicon sheet slows the transport of heat in the silicon, enabling more of the heat to convert to electric current. Once the fabrication method is perfected, the silicon sheets could be wrapped around steam or exhaust pipes to convert heat emissions into electricity that could power nearby devices or be delivered to a power grid. Another potential application would be cooling computer chips. ... This research was funded in part by the Department of Energy's Advanced Research Projects Agency-Energy.  
National Institute of Standards and Technology - May 19, 2023

### **Rochester Institute of Technology takes its place on international stage at G7 to advance semiconductor development**

...Rochester Institute of Technology is one of six U.S. universities named as part of an international partnership to improve competitiveness in computer chip design, development, and manufacturing. Micron Corp. and the National Science Foundation announced the partnership—the U.S.-Japan University Partnership for Workforce Advancement and Research & Development in Semiconductors for the Future (UPWARDS)— and signed a Memorandum of Understanding. With an established microelectronic engineering degree program, one of the first in the country, RIT currently has more than 1,500 alumni working in the semiconductor field. The specialized program blends the theoretical knowledge and hands-on training required to design and build chips. Through the UPWARDS partnership, RIT will participate in curriculum development, student and faculty exchanges, research projects, and Micron's Women in Semiconductors (WiSe) program...  
Rochester Institute of Technology - May 20, 2023

## **Climate Change / Green Energy & IT**

### **G7 Clean Energy Economy Action Plan**

...Acknowledging the clean energy aspirations of low- and middle-income countries (LMICs) and the critical role they play in the clean energy transition, our Action Plan seeks to deepen our cooperation with and support for partners around the world to ensure that the transition to the clean energy economies of the future reduces poverty and advances shared prosperity. We will keep supporting the research, development, and deployment of clean technologies as a critical enabler of an accelerated clean energy transition in LMICs. As a first step, we invite the IEA to convene an international forum with relevant parties from the public sector, finance, corporate, research and start-ups. We are committed to facilitating trade and investment in goods and services, including critical minerals that promote the reduction of greenhouse gases to help meet our climate objectives and mobilize additional capital for clean energy technologies while preventing economic and security risks caused by vulnerable supply chains...  
The White House - May 20, 2023

### **WVU researcher searching for 'holy grail' of sustainable bioenergy**

...Edward Brzostek and his students at the WVU are creating mathematical models to predict how bioenergy crops will enhance and store soil carbon through a renewed five-year grant from the U.S. Department of Energy. Brzostek believes the models could present a "win-win" that not only improves soil carbon but spurs renewable bioenergy from biological sources. Soil microbes in Brzostek's model determine how plants might store or lose carbon in the future. That's something current models haven't taken into consideration. "Our model can predict whether a bioenergy crop is going to be a net carbon benefit or actually result in carbon losses. Natural climate solutions like regenerative agriculture can help mitigate the effects of climate change...  
WVU - May 19, 2023

## **Digital Health**

### **Data from wearables could be a boon to mental health diagnosis**

...A team of researchers at Washington University in St. Louis showed that there is reason for optimism in detecting depression and anxiety disorders with wearable technology. They developed a deep-learning model called WearNet, in which they studied 10 variables collected by the Fitbit activity tracker. When considering depression and anxiety risk factors, WearNet did a better job at detecting depression and anxiety than state-of-the-art machine learning models. Further, it produced individual-level predictions of mental health outcomes, while other statistical analyses of wearable users assess correlations and risks at the group level. The Washington University study included a broad range of ages, races, ethnicities and education levels, the most diverse cohort to date. Their data came from the "All of Us" research program at the National Institutes of Health (NIH). The program houses a collection of datasets that are designed to accelerate biomedical research and precision medicine...  
The Source - Washington University in St. Louis - May 18, 2023

## **Digital engineering to reduce risks that lead to brain injuries**

...A University of Texas at Arlington engineering researcher who studies traumatic brain injuries has received funding to use computer motion simulation that replicates the movements of a person performing activities that could lead to injury. The project, funded by a nearly \$1 million grant from the Office of Naval Research Defense University Research Instrumentation Program (DURIP), will use real-time data of phantom head and phantom body reactions to ascertain what physical injuries could come from those motions. An integrated system could perform injury risk analysis in seconds compared to conventional systems, where data has to be downloaded, taken to a lab, and compiled before a computer system produces recommendations. "It's called digital engineering, which is a new field to computationally replicate a real-life environment in 3-dimensional space," Ashfaq Adnan, a UT Arlington professor, said. "It builds a model of motion and impact on the computer given the person's size. Then we test that in real time." ...  
The University of Texas at Arlington - May 22, 2023

## **Other IT Related**

### **FACT SHEET: Partnership for Global Infrastructure and Investment at the G7 Summit**

...At the 2023 G7 Summit in Hiroshima, Japan, G7 leaders affirmed their commitment to identify new opportunities to scale the Partnership for Global Infrastructure and Investment (PGII), President Biden and the G7's flagship infrastructure initiative which has attracted major investors to better respond to the global demand for high quality infrastructure financing, in low- and middle-income countries. President Biden also announced new PGII projects that reflect how the USG is working with partners to better mobilize capital for infrastructure in emerging markets: \* Under PGII, the USG will work to construct data centers throughout Africa. This week, DFC announced it is using its \$300 million loan facility to Africa Data Centers (ADCs), Africa's largest network of interconnected data facilities, to construct a first-of-its kind data center in Ghana. \* The United States Agency for International Development (USAID), and the U.S. Trade and Development Agency (USTDA) are supporting investments in digital infrastructure and improved access to digital services in Angola and the DRC. \* The United States facilitated a strategic partnership between Life Zone Metals and TechMet, a leading critical minerals company supported by a DFC equity investment...  
The White House - May 20, 2023

### **Taking a New Look at Fundamental Tech for Quiet Undersea Propulsion**

...Academic, commercial, and military researchers have attempted to realize a novel form of maritime propulsion involving no moving parts – no propeller, no drive shaft, no seals – just magnets and an electric current that silently propel a boat or submarine through water. Developers have had some success over the decades demonstrating magnetohydrodynamic (MHD) drive technology on a small scale, but it has been inefficient and impractical for full-scale systems due to a couple big tech hurdles. To address the materials challenge, DARPA announced the Principles of Undersea Magnetohydrodynamic Pumps (PUMP) program that seeks to create novel electrode materials suitable for a militarily significant MHD drive. The program will assemble and validate multi-physics modeling and simulation tools including hydrodynamics, electrochemistry, and magnetics for scaling MHD designs. The goal of the program is to determine an electrode material system and prototype an MHD drive that could be scaled up. A major problem when electric current, magnetic field, and saltwater interact is the development of gas bubbles over the electrode surfaces. The bubbles reduce efficiency and can collapse and erode the electrode surfaces. PUMP will address different approaches to reduce the effect of hydrolysis and erosion. The program also will enable modeling of interactions between the magnetic field, the hydrodynamic, and the electrochemical reactions, which all happen on different time and length scales. A hybrid PUMP Proposers Day is scheduled for May 31, 2023...  
DARPA - May 18, 2023

### **IARPA Kicks Off New Research Program to Detect Changes in Movement Patterns**

...The Intelligence Advanced Research Projects Activity (IARPA) — the advanced research and development arm of the Office of the Director of National Intelligence — recently announced the launch of a research program to develop systems capable of modeling population movement patterns around the globe and providing alerts when concerning anomalies emerge. The Hidden Activity Signal and Trajectory Anomaly Characterization (HAYSTAC) program aims to establish "normal" movement models across times, locations, and populations and determine what makes an activity atypical...  
Office of the Director of National Intelligence - May 18, 2023

## **STEM / Workforce & IT**

### **U.S. Department of Education Shares Insights and Recommendations for Artificial Intelligence**



...The U.S. Department of Education's Office of Educational Technology (OET) released a new report, "Artificial Intelligence (AI) and the Future of Teaching and Learning: Insights and Recommendations" that summarizes the opportunities and risks for AI in teaching, learning, research, and assessment based on public input. This report is part of the Biden-Harris Administration's ongoing effort to advance a cohesive and comprehensive approach to AI-related opportunities and risks. The report recommends that the Department continue working with states, institutions of higher education, school districts, and other partners to collaborate on the following steps: (1) Emphasize Humans-in-the-Loop (2) Align AI Models to a Shared Vision for Education (3) Design AI Using Modern Learning Principles (4) Prioritize Strengthening Trust (5) Inform and Involve Educators (6) Focus R&D on Addressing Context and Enhancing Trust and Safety (7) Develop Education-specific Guidelines and Guardrails...

U.S. Department of Education - May 24, 2023

### **Artificial Intelligence - Office of Educational Technology**

...Many priorities for improvements to teaching and learning are unmet. Educators seek technology-enhanced approaches addressing these priorities that would be safe, effective, and scalable. Like all of us, educators use AI-powered services in their everyday lives, such as voice assistants in their homes; tools that can correct grammar, complete sentences, and write essays; and automated trip planning on their phones. As a result, educators see opportunities to use AI-powered capabilities like speech recognition to increase the support available to students with disabilities, multilingual learners, and others who could benefit from greater adaptivity and personalization in digital tools for learning. They are further exploring how AI can enable writing or improving lessons, as well as their process for finding, choosing, and adapting material for use in their lessons. \* The U.S. Department of Education Office of Educational Technology's new policy report, Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations, addresses the clear need for sharing knowledge, engaging educators, and refining technology plans and policies for artificial intelligence (AI) use in education. \* Register for the June 13, 2023 webinar where The U.S. Department of Education and Experts Discuss "AI and the Future of Teaching and Learning." \* Check out the past listening sessions the U.S. Department of Education's Office of Educational Technology held, with support from Digital Promise, about Artificial Intelligence (AI)...

Office of Educational Technology - May 24, 2023

### **Students Find that Remote Operations Are Making the World a Little Smaller for Nanoscale Research**

...The Center for Functional Nanomaterials (CFN), at the U.S. Department of Energy's (DOE) Brookhaven National Laboratory, is making cutting edge scientific instruments available to researchers around the globe. Physics Professor Armando Rúa and his students at the University of Puerto Rico-Mayagüez were able to use instruments residing 1,600 miles away from them at Brookhaven's CFN. The class was conducting research on a vanadium oxide (V4O7) thin film sample. These films have come to the attention of researchers looking at applications in new and innovative electronics due to their resistive switching characteristics - one of these applications is neuromorphic computing. Chemistry Professor Dalice Piñero Cruz and her students collaborated with CFN scientists to use the remote capabilities of the FEI Talos F200X, a high-resolution analytical scanning/transmission electron microscope (S/TEM), to characterize metal phthalocyanine nanowires grown directly on electrical contacts. Teams at the remote computer at Río Piedras and the bridge computer in the microscope room at CFN used Zoom to communicate as they jointly operated the microscope for this research. A bridge computer, located in the instrument room, is necessary to bridge the gap between the remote computer and the instrument's computer...

Brookhaven Lab - May 17, 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 - May 17, 2023

### **New U.S. Department of Transportation Publications in the National Transportation Library**

...The U.S. Department of Transportation released four new reports in April highlighting its latest research initiatives and findings. (1) Artificial Intelligence (AI) for Intelligence Transportation Systems (ITS) Challenges and Potential Solutions, Insights, and Lessons Learned (FHWA-JPO-22-968) report focus on the the implications of AI adoption and implementation for ITS as well as insights that agencies could consider in helping to mitigate any challenges. (2) Incorporating Automated Vehicles (AV) into Scenario Planning Models (FHWA-JPO-22-926) report presents the findings of a project tasked with integrating AVs into the modeling process to develop metrics, models, and prototype tools for quantitative evaluation of AV scenario planning impacts. (3) System Dynamics Models of Automated Vehicle Impacts (FHWA-JPO-22-985) report presents a project that developed causal loop diagrams for several "building blocks" (archetypes) that affect how automated vehicles might be used, including new product adoption, sustainability of business model, mode choice, scale effects, congestion, and residential relocation...

## Upcoming Conferences / Workshops / Webinars

### **U.S. Leadership in Software Engineering & AI Engineering: Critical Needs & Priorities 2023**

...Carnegie Mellon University (CMU) Software Engineering Institute (SEI) and the Networking and Information Technology Research and Development (NITRD) Software Productivity, Sustainability, and Quality (SPSQ) Interagency Working Group are partnering on this workshop, to inform a community strategy for building and maintaining U.S. leadership in software engineering and AI engineering, and positively impact progress in multiple application domains. Using Architecting the Future of Software Engineering: A National Agenda for Software Engineering Research and Development as a starting point, we will identify and explore important research areas for the future of software engineering that are critical for multidisciplinary research. June 20-21, 2023  
resources.sei.cmu.edu - May 24, 2023

### **NICE Conference & Expo: Resetting Expectations: Jun 5-7, 2023**

...This year's conference Theme "Resetting Expectations: Creating Accessible Cybersecurity Career Pathways" is about reimagining what it takes to be a cybersecurity professional. By resetting the expectations, cybersecurity will be an accessible career path through various, nontraditional avenues. June 5-7th, 2023 ...  
NICE | Conference and Expo - May 16, 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

### **Notice of Workshop on U.S. Leadership in Software Engineering & Artificial Intelligence Engineering: Critical Needs & Priorities**

...The workshop on U.S. Leadership in Software Engineering & AI Engineering: Critical Needs & Priorities will take place on June 20 and 21, from 9:30 a.m. to 5:00 p.m. (ET), at the National Science Foundation, in Alexandria, VA. Workshop goals are to: (1) Identify research questions that excite the computing community and spark new collaborations. (2) Identify addendums or updates to the National Agenda for Software Engineering roadmap. (3) Produce a report summarizing challenges and strategic priorities for building and maintaining U.S. leadership in software engineering & AI engineering for the advanced computing and software community. Due to space limitations, in-person attendance is by invitation only; remote participation will be available via Zoom.  
Federal Register - 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.

## Innovation Through NITRD Coordination

Networking and Information Technology Research and Development National Coordination Office, Washington, DC USA

To unsubscribe from this newsletter please reply to news\_brief@nitrd.gov with the subject line "Unsubscribe"