



NITRD News Brief

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

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

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

Federal Agency Funding Opportunities

DHS Launches New Series of National Climate Resilience Prize Competitions

...The Department of Homeland Security announced a new prize competition focusing on clean energy sources to keep essential services functioning during power outages, highlighting the Department's efforts to address risks posed by climate change. The Science and Technology Directorate (S&T) administers prize competitions to crowdsource innovation and harness the creativity of the American public to solve critical homeland security challenges. The Clean Power for Hours Challenge seeks innovative back-up power solutions that will help critical facilities such as fire stations, hospitals, and shelters, continue to operate during electrical outages. Winning solutions should be environmentally friendly, affordable, easy-to-use, and provide back-up power generation for critical facilities that serve communities across the United States. The Challenge is open to U.S. citizens, permanent legal residents and businesses incorporated in and maintain a primary place of business in the United States. All submissions are due by August 8, 2023...

Homeland Security - Apr 21, 2023

Artificial Intelligence / Machine Learning

NSF-Funded UCF Project Leads Development of First Large-scale System for Extended Reality Research

...A University of Central Florida researcher is leading a nearly \$5 million U.S. National Science Foundation-funded project to develop the first, large-scale system for extended reality human subjects research. Called the Virtual Experience Research Accelerator, or VERA, the system will enable researchers to carry out large studies in extended reality (XR) environments, including virtual reality (VR), augmented reality and mixed reality, with large and diverse populations. The NSF announced the funding today as part of a \$16.1 million investment the agency is making in artificial intelligence (AI) infrastructure through its Computer and Information Science and Engineering (CISE) Community Research Infrastructure program. One goal of the VERA project is to provide researchers with a new and powerful tool that could lead to improved XR technologies that are more effective for the user and make XR research more inclusive to underrepresented groups. While VERA is primarily aimed at human subjects research in XR, it will also contribute to the success of AI research by providing researchers with a tool for collecting large data sets of realistic human behavior that is representative of the general population...
UCF Today - Apr 25, 2023

USDA/DOE/ARO/NIH/ONR-funded AI system can generate novel proteins that meet structural design targets

...MIT researchers developed machine-learning algorithms that can generate proteins with specific structural features, which could be used to make materials that have certain mechanical properties, like stiffness or elasticity. Such biologically inspired materials could potentially replace materials made from petroleum or ceramics, but with a much smaller carbon footprint. The researchers from MIT, the MIT-IBM Watson AI Lab, and Tufts University employed a generative model but they adapted the model architecture so it could predict amino acid sequences of proteins that achieve specific structural objectives. This tool could be used to develop protein-inspired food coatings, which could keep produce fresh longer while being safe for humans to eat. ... This research was supported, in part, by the U.S. Department of Agriculture, the U.S. Department of Energy, the Army Research Office, the National Institutes of Health, and the Office of Naval Research.
MIT News - Apr 20, 2023

NSF-funded researcher addresses reinforcement learning challenges

...Two primary areas within machine learning are supervised learning and reinforcement learning. Most popular machine learning successes are in supervised learning, with applications such as image recognition through your smartphone or Facebook or the ability to interact with Siri or Google Home. Reinforcement learning is a class of machine learning that addresses the problem of learning to control systems in an unknown and evolving environment. Reinforcement learning has been considered as the enabling technology for achieving our transformation to a future with autonomous robots and self-driving cars. NSF-funded researcher at Texas A&M University, Dr. Dileep Kalathil, is investigating how reinforcement learning can be successfully integrated into more aspects of daily life by examining three primary elements – the robustness, safety and adaptivity of the algorithms. One of the most significant challenges currently preventing researchers from successfully deploying reinforcement learning algorithm-enabled robots is simulation-to-reality gap. Kalathil is focusing on robust reinforcement learning, safe reinforcement learning and meta-reinforcement learning. The goal of robust reinforcement learning is that the algorithm can cope no matter what unforeseen events happen. Meta-reinforcement learning is an approach where the experience gained from solving a single task or a variety of tasks is refined into a meta-policy allowing the system to seamlessly perform a new, related task. He received the Faculty Early Career Development Award from the National Science Foundation for work in this area.
Texas A&M University College of Engineering - Apr 26, 2023

Robotics / Autonomous Vehicles

Argonne's self-driving lab accelerates the discovery process for materials with multiple applications

...Researchers have a new scientific tool called Polybot, combining the power of artificial intelligence with robotics. The potential applications of Polybot extend far beyond biomedical devices. They include materials for computing devices with brain-like features and new sensors for monitoring climate change. They also include new solid electrolytes that would eliminate the current liquid electrolyte in lithium-ion batteries, making them less likely to catch fire. A typical experiment with Polybot begins by using AI and robots for different tasks. The automated system chooses a promising recipe for a polymer solution, prepares it and prints it as a very thin film at a selected speed and temperature. The system then hardens this film for an optimal length of time and measures key features, such as thickness and uniformity, as a quality check. Next, it assembles multiple layers together and adds electrodes to form a device. After that, Polybot measures the device's electrical performance. All the relevant data are automatically recorded and analyzed with machine learning and passed to the AI component. ... This research was supported by the DOE Office of Basic Energy Sciences.
Argonne National Laboratory - Apr 25, 2023

Quantum

New foundry to accelerate quantum information research at Argonne National Laboratory

...Powerful quantum computers, ultraprecise quantum sensors and tamperproof quantum communication networks could revolutionize areas as varied as medicine, energy and finance. The U.S. Department of Energy's (DOE) Argonne National Laboratory has built the Argonne Quantum Foundry as part of its mission to accelerate advances in quantum information science. The creation of the Argonne Quantum Foundry, a key part of the lab's quantum program, was led by Q-NEXT, a DOE National Quantum Information Science Research Center. Part of the Q-NEXT mission has been to make quantum materials available to researchers, meeting a critical need in quantum information research. The Argonne Quantum Foundry provides researchers with the tools to develop, test, fabricate and integrate novel forms of matter for quantum systems. The Argonne Quantum Foundry focuses on a class of materials known as semiconducting devices. It features areas for developing, testing and fabricating semiconductor qubits, the fundamental components of quantum devices. It also features a prototype silicon-based quantum computer, which will run simulations to aid in materials development. The work was supported by the U.S. Department of Energy Office of Science National Quantum Information Science Research Centers as part of the Q-NEXT center...
Argonne National Laboratory - Apr 20, 2023

Cybersecurity / Privacy

FACT SHEET: Treasury Department Announces 2023 De-Risking Strategy

...The U.S. Department of the Treasury published the 2023 De-risking Strategy pursuant to the Anti-Money Laundering Act of 2020 (AMLA). This fact sheet summarizes key findings and policy recommendations to address the issue of de-risking, which refers to financial institutions terminating or restricting business relationships indiscriminately with broad categories of customers rather than analyzing and managing the specific risks associated with those customers. This report recommends that the federal government: * Promote consistent supervisory expectations, including through training to federal examiners, that consider the effects of de-risking; * Consider proposing regulations that require financial institutions to have reasonably designed and risk-based AML/CFT programs supervised on a risk basis; * Continue to assess the opportunities, risks, and challenges of innovative and emerging technologies for AML/CFT compliance solutions...
U.S. Department of the Treasury - Apr 25, 2023

DOD General Counsel Delivers Keynote Remarks at U.S. Cyber Command Legal Conference

...Department of Defense General Counsel, the Honorable Caroline Krass, provided the keynote remarks at the U.S. Cyber Command Legal Conference. She highlighted the significant role of the law and the Department of Defense legal community in advancing integrated deterrence, one of the Department's top priorities as outlined in the 2022 National Defense Strategy (NDS). With competitors in cyberspace seeking to "steal our technology, undermine our military advantages, threaten our critical infrastructure, disrupt our government and commerce, weaken our collective prosperity, and challenge our democratic processes," Krass outlined how the lawyers support U.S. Cyber Command's efforts to manage escalation, campaign, and prioritize interoperability with U.S. Allies and partners...
U.S. Department of Defense - Apr 20, 2023

DHS-funded VCU researchers fight cybercrime with new digital tools and techniques

...Irfan Ahmed is an associate professor of computer science and director of the Security and Forensics Engineering Lab within VCU Engineering's Department of Computer Science. In the SAFE Lab, he leads a pair of projects funded by the U.S. Department of Homeland Security — aimed at keeping industrial systems safe from the bad guys, and showing how the same tools crafted for investigating cyberattacks can be used to probe other crimes. Ahmed's SAFE Lab focuses on protecting industrial control systems used in the operation of nuclear plants, dams, electricity delivery systems and a wide range of other critical infrastructure in the U.S. One of Ahmed's DHS-supported projects, called "Digital Forensic Tools and Techniques for Investigating Control Logic Attacks in Industrial Control Systems," allows him to craft devices and techniques that cyberdetectives can use in their investigations. He noted that investigation capabilities are an under-researched area, as most emphasis has been on prevention and detection of cyberattacks. Ahmed's second DHS-funded project is called "Data Science-integrated Experiential Digital Forensics Training based-on Real-world Case Studies of Cybercrime Artifacts." ...
Virginia Commonwealth University News - Apr 20, 2023

5G, Wireless Spectrum, Networking & Communications

NASA Data Helps Track Veterans' Exposure to Air Pollution

...Researchers with the U.S. Department of Veterans Affairs (VA) are using NASA Earth observations of smoke and other air pollution to study the health impacts on veterans who were deployed to Afghanistan, Iraq, and other areas of Southwest Asia. Working with the VA, NASA-funded researchers created an online resource that compiles NASA satellite data on air pollution around specific military bases. The team used satellite observations to create an exposure assessment tool called the Source-Differentiated Air Quality System (SDAQS). This web-based tool produces air quality information about each military base in a format that allows researchers at the VA and other institutions to directly access it through visualizations and data downloads. SDAQS includes data on the air pollutant PM2.5, inhalable particles that are generally 2.5 micrometers or smaller – small enough to move deep into the lungs and respiratory tract. The data come from NASA's Multi-Angle Implementation of Atmospheric Correction (MAIAC) algorithm, which was used by the team to derive measurements of average PM2.5 concentrations based on data collected by the Moderate Imaging Spectroradiometer (MODIS) instruments on NASA's Terra and Aqua satellites. The exposure information obtained from NASA satellites will be used in a VA study linking this information with the deployment histories of over 5,000 veterans. Garshick said the goal is to help researchers trace associations between the different pollution exposures and specific health conditions...

National Aeronautics and Space Administration - Apr 24, 2023

Severe geomagnetic storm hits Earth; aurora may be visible as far south as Alabama

...NOAA's Space Weather Prediction Center — a division of the National Weather Service — is monitoring a severe geomagnetic storm generated by a coronal mass ejection (CME) that erupted from the sun. Severe geomagnetic storms can disturb the electrical grid, but power operators take precautions in response to NOAA warnings and alerts. Spacecraft in low Earth-orbit may experience increased drag leading to tracking problems. Position and navigation using satellite signals like GPS may be disrupted, primarily in the polar regions, but the impact can extend into mid-latitudes. HF (high frequency) radio communications can also be disturbed, and depending on the magnitude of the storm, the impacts can last for days. High-frequency radio disruptions can hinder the work of airlines, emergency managers, radio amateurs and others...

National Oceanic and Atmospheric Administration - Apr 24, 2023

6G: Open and Resilient by Design: Opening Remarks by Alan Davidson Assistant Secretary of Commerce for Communications and Information

...From 3G to 4G to 5G, advances in mobile data in particular have brought the Internet to billions of people around the world. It may seem strange to be talking about 6G at a time when so many Americans and people around the world are still just learning about 5G. It is so important for policymakers to look ahead to this next-generation technology and how we can harness the innovations it will bring. In a 6G world, our phones may not be the most important device we carry. The possibility of ubiquitous connectivity with 6G could enable the ability to sense the environment, people and objects. This could usher in a new era of situational awareness as well as sustainability and sector efficiencies. At NTIA, we are excited to help usher in this virtualization and openness through our \$1.5 billion Public Wireless Supply Chain Innovation Fund. This fund will support both 5G and 6G by spurring development of open, interoperable, and standards-based networks. These networks will almost certainly make up the backbone of 6G...

NTIA - Apr 21, 2023

Advanced Manufacturing

Improving Supply Networks, Inspired by Baldrige

...The last few years have revealed substantial vulnerabilities in supply networks across industries, from the lack of pandemic-related equipment such as masks and ventilators in hospitals in 2020, and, recently, the supply problems that have led to higher-priced eggs. Supply-chain quality doesn't happen by accident. The Baldrige Criteria offer the questions that organizations should be asking themselves to ensure that they are following a roadmap to success. The seven-step supply-chain improvement plan to the categories of the Baldrige Criteria as follows: (1) Promote a culture of quality in the supply chain, with leaders supporting a clearly stated quality vision. (2) Create a supply-chain strategy with sound design and planning that supports the organization's short- and long-term objectives. (3) Focus on the customer by soliciting complaints and resolving problems; using surveys, focus groups, and customer advisory boards. (4) Consider a roadmap for IT measurement and analysis that includes performance measurement, performance analysis and review, performance improvement, and technology management...

National Institute of Standards and Technology - Apr 25, 2023

DOE renews partnership with Vanderbilt collaborator Institute for Advanced Composites Manufacturing Innovation

...The Department of Energy has renewed its partnership with the Institute for Advanced Composites Manufacturing Innovation. The IACMI is a community of industry, universities, national laboratories and government agencies working together to accelerate the development and adoption of innovative manufacturing technologies. The funding connected with the renewed partnership will be used over five years to further technological R&D and accelerate commercialization in the domestic composites manufacturing sector. Vanderbilt's Laboratory for Systems Integrity and Reliability is funded by an investment from IACMI. Vanderbilt's contributions to IACMI are in the general area of

manufacturing quality control. IACMI is one of 16 national Manufacturing USA® institutes established to catalyze advanced manufacturing and materials applications and the first to receive a second round of funding from the DOE...
Vanderbilt University - Apr 21, 2023

Microelectronics

CHIPS for America Outlines Vision for the National Semiconductor Technology Center

...The U.S. Department of Commerce's National Institute of Standards and Technology (NIST) released a paper outlining its vision and strategy for a National Semiconductor Technology Center (NSTC), a key component of the research and development program established by President Biden's CHIPS and Science Act. The paper, "A Vision and Strategy for the National Semiconductor Technology Center," lays out how the NSTC will accelerate America's ability to develop the chips and technologies of the future to safeguard America's global innovation leadership. The NSTC has three high-level goals: (1) Extend America's leadership in semiconductor technology. (2) Reduce the time and cost of moving from design idea to commercialization. (3) Build and sustain a semiconductor workforce development ecosystem...
National Institute of Standards and Technology - Apr 25, 2023

DOE/AFOSR-funded research finds a 'sandwich' of graphene and boron nitride may lead to next-gen microelectronics

...Moiré patterns occur everywhere. Scientists have been experimenting with the moiré pattern that emerges when a sheet of graphene is placed between two sheets of boron nitride. The resulting moiré pattern has shown tantalizing effects that could vastly improve semiconductor chips that are used to power everything from computers to cars. By sandwiching graphene between two layers of boron nitride, which also has a hexagonal pattern, a moiré pattern results. The presence of this pattern is accompanied by dramatic changes in the properties of the graphene, essentially turning what would normally be a conducting material into one with (semiconductor-like) properties that are more amenable to use in advanced microelectronics. University at Buffalo researchers established how the moiré pattern in graphene can be adapted for use in technological applications such as new types of communication devices, lasers and light-emitting diodes. ... The research was funded in part by the U.S. Department of Energy and a MURI grant from the Air Force Office of Scientific Research.
University at Buffalo - Apr 25, 2023

Climate Change / Green Energy & IT

New report details clean energy technology innovation activities across the federal government

...The White House Office of Science and Technology Policy (OSTP), U.S. Department of Energy (DOE), and the U.S. Department of State released the National Innovation Pathway Report, highlighting the Biden-Harris Administration's all-hands-on-deck strategy for accelerating key clean energy technology innovations. The Administration is advancing a three-pronged approach that prioritizes innovation, demonstration, and deployment to scale the technologies the United States needs to achieve its goals of a carbon pollution-free electricity sector by no later than 2035. The report is also a key contribution to Mission Innovation, an international organization comprised of 23 member countries and the European Union. Mission Innovation is focused on catalyzing a decade of action through its research missions and increasing investment in research, development, and demonstration to make clean energy more affordable, attractive, and accessible for all...
The White House - Apr 20, 2023

DOD Makes Climate Assessment Tool Available to Partner Nations

...The Department of Defense developed the DOD Climate Assessment Tool. DCAT, as it's called, is a web-based tool informed by volumes of data from global climate models, historical observations, and flood modeling that can help the department prepare for climate hazards at over 2,300 DOD locations around the world. The department has been developing a separate capability, the Climate Assessment Tool, or CAT, that will be provided to several partner nations to give those countries access to an assessment tool similar to DCAT to enable their own climate change exposure analyses. Giving partner nations access to CAT enhances national resilience against climate change by enabling the same quality in our partners and allies. Customized versions of CAT will be provided to Australia, Germany, Italy, Japan, the Republic of Korea, and the United Kingdom. One really useful aspect of the tool is that it can provide flood maps for riverine flooding and coastal flooding with sea level rise...
U.S. Department of Defense - Apr 21, 2023

Delving into Earth's Systems Today to Support the Solutions of Tomorrow

...Climate change isn't a future problem. It is a today problem that will only get worse as long as we continue to produce large amounts of greenhouse gases. The Biden Administration is supporting this action through our work to build a clean energy future and support for the Department of Energy's (DOE) Office of Science. Our long-running research serves as the foundation for many of the clean energy and energy efficiency technologies today, including batteries and LED lights. We are continuing these efforts by supporting the crosscutting foundational science for DOE's Energy Earthshots. The Energy Earthshots are accelerating breakthroughs of more abundant, affordable, and reliable clean energy solutions to the climate crisis. There are six Earthshots, each with a different goal...

Department of Energy - Apr 21, 2023

Digital Health

NIH-funded study found a biomarker pattern in kids with COVID 19-linked inflammatory syndrome

...Children with multisystem inflammatory syndrome, a rare condition linked with the virus that causes COVID-19, have biochemical indicators of cell injury and cell death that are distinct from other children with COVID-19. National Institutes of Health-funded researchers used high speed, artificial intelligence-controlled molecular sequencing of blood-and-plasma RNA and plasma DNA and found that children with MIS-C have biomarkers indicating damage to multiple organs, the lining of blood vessels and the nervous system. They believe their findings could lead to the development of tests that allow clinicians to distinguish between MIS-C and other conditions involving widespread inflammation...

National Institutes of Health - Apr 25, 2023

Grad student awarded NSF Graduate Research Fellowship that helps design 'artificial muscles' you can toss in the compost bin

...The vision of a team of engineers, including CU Boulder graduate student Ellen Rumley, on robots of the future is that they're soft and flexible enough to bounce off walls or squeeze into tight spaces. And when you're done with them, you can toss these machines into a compost bin to decompose. The researchers described their designs for a new kind of robotic actuators, or "artificial muscles." The group's actuators, which work by shifting fluid around in squishy sacs, can power robotic arms and legs with life-like movements. They also dissolve naturally in soil over a period of a few months. In the new study, the team developed a series of soft robotic actuators entirely made of sustainable ingredients. The muscles are about as versatile as traditional Hydraulically Amplified Self-Healing ELectrostatic (HASEL) actuators and, in some cases, can flex for 100,000 cycles or more without breaking. HASEL actuators are made up of transformer oil inside plastic pouches, which are partially covered by a thin layer of an electrical conductor. If you apply electricity across the conductors, the pouch will "zip together," squeezing the fluid from one end to the other. As a result, the pouches change shape and can apply force to devices like a robotic limb. Rumley is the recipient of a U.S. National Science Foundation's Graduate Research Fellowship...

CU Boulder Today - Apr 20, 2023

Other IT Related

Leveraging Science and Technology for Environmental Justice

...President Biden signed an Executive Order to advance environmental justice. The President is directing federal agencies to identify and address gaps in science, data, and research related to environmental justice. The President is also directing the White House Office of Science and Technology Policy (OSTP) to develop a federal strategy for identifying and filling environmental justice data and research gaps. This work will advance the analysis of cumulative impacts, identify and recommend new data sources for the Climate and Economic Justice Screening Tool...

The White House - Apr 21, 2023

Developing Agile, Reliable Sensing Systems with Microbes

...Current environmental monitoring approaches can rely on both distributed sensor networks - on the ground or in the water - and remote sensing platforms, like satellites, to collect information important for the protection of people and property. The Department of Defense (DOD) is interested in developing new, complementary sensors to monitor the environment with high spatial resolution, and reduced power and logistical burden, to further enhance monitoring capabilities and significantly reduce potential risk to personnel. Recent research has demonstrated that microbes, such as bacteria, fungi, or microalgae, offer promise for detecting different types of input signals, including both chemical (e.g., toxic or radioactive materials, heavy metal pollutants) and physical phenomena (e.g., light, electric current, magnetic fields). DARPA's new Tellus program will explore the development of an interactive, platform methodology for the rapid design of microbe-based sense-and-respond devices for monitoring DOD-relevant environments. Specifically, DARPA seeks to establish the range of chemical and physical signals that microbial devices can detect, environmental conditions they can tolerate, and types of output signals that can be generated. Tellus is focused on assessing sensor functionality across many different environments and conditions. A Proposers Day is scheduled for

May 2, 2023...
DARPA - Apr 22, 2023

From Antiquated to Automated: USACE wetland delineation tool helps revolutionize regulatory process

...The United States has lost more than half of its wetlands since the 1600s, and approximately 35 percent of the world's wetlands were lost between 1970 and 2015. The U.S. Army Corps of Engineers (USACE) requires the completion of a wetland delineation for essentially all construction activities that occur in the nation's wetlands to establish the location and extent of those wetlands to comply with federal, state and local regulations. To simplify and expedite this process for the public, scientists with the U.S. Army Engineer Research and Development Center (ERDC) collaborated with regulatory staff of the USACE Detroit District (LRE) to develop Automated Wetland Determination Data Sheets (ADS). The ADS are a practical, readily applied technology that streamlines and improves the accuracy of the permitting process by automatically calculating many of the field indicators of wetland vegetation, hydrology and soils based upon user inputs. In the past, wetland delineation data was documented using paper forms. Environmental consultants, public sector practitioners and agency staff would collect field data documenting the predominance of wetland vegetation, hydric (wetland) soils and signs of hydrology before conducting calculations and analysis prior to submitting permit applications to USACE. Then USACE staff would review the forms for technical accuracy and omissions, which often required requests for corrections or additional data and frequently slowed the permitting process. The next steps for the ADS include adding additional functionality and links with geospatial tools to further improve accuracy and efficiency. The team is also working to transition ADS for use on mobile devices, a process that is being beta tested...

US Army Corps of Engineers - Apr 25, 2023

STEM / Workforce & IT

Digitize Your Onboarding and Training With the Modern Learner in Mind

...It's time for a digital workforce transformation. The digital transformation of your workforce is similar in many ways to the digitization of your manufacturing operations. Digitizing your workforce – from onboarding to standard work training and career development – is similar in many ways to changing initiatives in your operation or supply chain. Your digital approach to training could include: * Embedded QR codes in standard work, which can provide access to videos, audio or written information. * A QR code in written training materials to add video and sound capability. * Group QR codes on bulletin boards to create a training library. One company got started by shooting smartphone videos that showed machine operators performing a task and describing what they were doing in the process...

National Institute of Standards and Technology - Apr 21, 2023

NASA Armstrong Supports Robotics Competition

...Volunteers from NASA's Armstrong Flight Research Center assisted students competing in the Aerospace Valley Regional Robotics Competition. NASA Armstrong sponsored several Antelope Valley teams, employee volunteers served as mentors and judges, and the mobile fabrication shop helped with team repairs. NASA Armstrong's mobile shop allows a NASA technician to weld, machine, or perform sheet metal repairs to damaged robots and send it back into action. Teams file a work order detailing what part or repair they need, then NASA Armstrong staff help with the robots. To promote STEM education among youth, NASA created the Robotics Alliance Project, which sponsors hundreds of teams across the country, as well as several robotics competitions. In every round of the Aerospace Valley competition, two competing alliances, each comprising three teams, scored points by retrieving game pieces – cubes and cones – and returning them to their “community.” Teams also scored points by climbing onto and docking on a charging station. For part of the action, the robots operated autonomously, and for the rest, human drivers remotely guided them...

National Aeronautics and Space Administration - Apr 25, 2023

NASA selects UH Mānoa student team to develop, launch CubeSat

...A University of Hawai'i at Mānoa student-led team was selected to develop a small research satellite for the NASA CubeSat Launch Initiative (CSLI) planned to launch between 2024–2027. UH's proposed CubeSat is one of eight across the nation that will launch aboard planned missions led by NASA. The CubeSats will deploy into orbit from either a rocket or the International Space Station. Students enrolled in the earth and planetary exploration technology (EPET) certificate based in UH's Hawai'i Institute of Geophysics and Planetology (HIGP) have already completed the CubeSat design and many of the spacecraft parts are already in the laboratory and tested. This year the team will complete the science payload instruments, and in 2024 they will build the spacecraft, integrate the payload, test the entire assembly and get it ready for delivery to the launch provider by the end of the year...

The Magazine of the University of Hawaii - Malamalama - Apr 25, 2023

NIH-funded professor creates new course that offers study of emerging field

...A new course called Microphysiological Systems that is the first of its kind at Johns Hopkins was created by Deok-Ho Kim, a professor of biomedical engineering. It focuses on applying biological and engineering fundamentals to design microphysiological systems, or MPS, such as organ and tissue chips, 3D-printed tissues, and organoids—artificially-grown masses of cells that resemble an organ. MPS are used to study human disease, drug development, and precision medicine. The class features lessons on human stem cell technologies, organs-on-a-chip engineering, and education on MPS models for the heart, brain, lung, gut, kidney, tumors, and vascularization. The course also covers tissue chips for space biology, regulatory tools, and industrial applications. Students learn biofabrication techniques such as microfluidics (manipulation of microscale fluid flow), microfabrication (making of miniaturized structures), and 3D bioprinting to create in vitro miniaturized, 3D complex human tissue models. In addition to the skeletal muscle work, students also learn about iPSC maintenance, turning iPSCs into heart tissue, and using MPS for cancer drug screening. Kim has developed several MPS models and is a principal investigator on a National Institutes of Health-sponsored grant to study a muscular dystrophy tissue-on-a-chip model for future clinical trials...
Hub - Johns Hopkins University - Apr 25, 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 - Apr 13, 2023

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Innovation Through NITRD Coordination

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

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