

New Center to Develop Best Practices to Combat Cybersecurity Threats



Whether it's Target, the White House or JP Morgan Chase, organizations around the world face a constant barrage of cybersecurity threats that can compromise sensitive data, bring down networks and disrupt commerce and government. A new federally funded research and development center (FFRDC) led by the MITRE Corporation brings together researchers at the University of Maryland,

College Park and the University of Maryland, Baltimore County, who will work with other universities on the FFRDC's Academic Affiliates Council as well as key stakeholders from industry and government to tackle these challenges.

"We are thrilled to continue to reach for new discoveries with our system, industry and government partners," says UMD Vice President and Chief Research Officer **Patrick O'Shea**.

More than 50 faculty members are engaged in cutting-edge cybersecurity research across campus, ranging from computer science and engineering to criminology, psychology, business and public policy, including at the Maryland Cybersecurity Center.

The new FFRDC, sponsored by the National Institute of Standards and Technology (NIST), is the first to focus exclusively on cybersecurity to protect national information systems. The contract was awarded for five years, with an option to renew every five years up to 25 years and with funding expected to grow each year.

"We will look to solve cross-cutting and sector-specific challenges," says **Joseph JaJa**, who will serve in a leadership role in the new FFRDC, partnering with MITRE. He holds a joint appointment in the Department of Electrical and Computer Engineering and the Institute for Advanced Computer Studies. "Every sector faces its own types of challenges and the new FFRDC will bring together key stakeholders from each one to develop model cybersecurity examples

and practice guides to address their technical cybersecurity challenges."

In response to the increasing frequency and sophistication of cybersecurity attacks, which cost businesses \$500 billion per year, the FFRDC will focus on bringing together experts from industry, government and academia to provide cost-effective cybersecurity solutions based on commercially available technologies that can be easily scaled and adopted throughout the business sector.

The new FFRDC will support the National Cybersecurity Center of Excellence (NCCoE), which NIST, the state of Maryland, and Montgomery County, Md., established in 2012 to help businesses secure their data and digital infrastructure.

Though the FFRDC will be located in Rockville, JaJa says UMD faculty and students will be involved in the center's activities. He hopes to establish labs on campus to test prototypes developed at the center and to offer internship opportunities to students.

"We want to involve students not only from computer science or computer engineering, but also from business, psychology, public policy and criminology," he says. "We want students from across campus to participate."

UMD Research Hits the Road

The Division of Research and the Big Ten Committee on Institutional Cooperation hosted "Disaster Resilience: The Intersection of Research and Policy" at the Capitol Hill Visitor Center as part of the A. James Clark School of Engineering's Impact Week.



From left: Gerald Galloway, Glenn L. Martin Professor of Engineering; Alice Chamberlayne Hill, senior advisor for preparedness and resilience, White House National Security Council Staff; Amr Elnashai, dean of engineering, the Pennsylvania State University; David Miller, associate FEMA administrator for the Federal Insurance and Mitigation Administration; and Todd Richardson, associate deputy assistant secretary for policy and development, U.S. Department of Housing and Urban Development.

University officials visited Lockheed Martin's Aeronautics division, headed by Orlando Carvalho M.B.A. '06, in Fort Worth, Texas in September. They toured the F-35B fighter plane manufacturing facility and reaffirmed UMD and Lockheed's commitment to existing and future collaborations.



From left: Robert H. Smith School of Business Dean Alexander Triantis; A. James Clark School of Engineering Dean Darryll Pines; Associate Vice President for Research Development Ken Gertz; Vice President and Chief Research Officer Patrick O'Shea; and Department of Aerospace Engineering Chair Norman Wereley.

First Leidos Grants Awarded

The new UMD-Leidos Seed Grant Program is off and running. The program was launched this fall to help facilitate and incentivize collaborations between UMD researchers and experts at Leidos, a national security, health and engineering solutions company, formerly known as SAIC. The program is part of Leidos' \$200,000 gift to UMD supports research, education programs, student activities and fellowships. The first two recipients of seed grants have topics that do not disappoint.



One project seeks to improve the health of individuals and populations. **Ritu Agarwal**, professor of information systems, seeks to improve the understanding of clinical and administrative outcomes in health care. Agarwal's research will yield predictive models that identify appropriate people for intervention and prevention programs.

Ben Shneiderman, professor of computer science, is leading the second seed project along with **Catherine Plaisant**, senior research scientist. Both are members of the Human-Computer Interaction Lab and are focused on insider threat detection through exploring temporal patterns in large collections of event sequences.





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SPOTLIGHT

Census Data Research Center Comes to UMD

U.S. Census Bureau data has long been part of the fabric of UMD research, but until recently certain U.S. census data could only be accessed by driving to agency headquarters in Suitland, Md., with a proposal and a \$10,000-per-year fee. After analyzing data exclusively on census machines, data tables would have to be approved by the bureau and sent back to the researcher at a later date.



Michael Ball

Things are changing for these data-seeking researchers. A new Census Research Data Center coming to the university will provide faculty and students with faster, easier and inexpensive access to valuable information.

“There’s a lot of advantages of having it here,” says center Director Michael Ball, senior associate dean for faculty and research at the Robert H. Smith School of Business. “We see this as a resource for the whole campus. We also potentially see an intellectual community growing around this kind of data and data analysis of this type.”

The new center at Maryland, one of 19 in the country, will be in Van Munching Hall. In addition to being a boon for faculty, Ball anticipates it helping graduate students who can’t afford to access the data under the old system. The center is supported by the Smith School, the College of Behavioral and Social Sciences and the School of Public Health, as well as the Division of Research and the Office of the Provost.



The Division of Research publishes RESEARCH@MARYLAND several times per semester. Its goal is to better inform and connect the research community at the University of Maryland. Your comments and suggestions are welcome. Please email them to Anne Geronomo, Division of Research, at geronomo@umd.edu.

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FACULTY AWARDS & HONORS



ALLISON DRUIN, professor in the College of Information Studies and co-director of the Future of Information Alliance, was named a 2014 Association for Computing Machinery (ACM) Distinguished Scientist. She was recognized for her “significant impact in the field of computing, computer science, and/or information technology.” She is one of 30 ACM members honored this year.



Geology Assistant Professor **VEDRAN LEKIC** was awarded a Packard Fellowship for Science and Engineering from the David and Lucile Packard Foundation. The fellowship is one of 18 awarded this year nationwide to the most promising early-career scientists and engineers. Lekic explores the state, dynamics and dominant processes of the solid Earth, as well as those of other planets and satellites, to develop better ways of analyzing and modeling seismic data, leading to improved understanding of the Earth’s inner structure.



HERMAN DALY, professor emeritus of public policy, received the 2014 Blue Planet Prize, an international environmental award sponsored by the Asahi Glass Foundation. He was honored for his work with steady state economics using the concept of sustainability and incorporating the environment, local communities, quality of life and ethics into economic theory.

NEW FACULTY

We introduce you to new faculty and research scientists in the Maryland research community.



Richard Prather is an assistant professor of human development and quantitative methodology. He studies early math and number learning, cognitive development, computational models, cognitive neuroscience and experimental psychology.



Kate Tully is an assistant professor of agricultural ecology. She assesses the sustainability of food production systems by examining their effects on interactions among plants, soils, carbon, nutrient and water cycles.



Chanon Adsanatham is an assistant professor of English. He researches rhetoric and writing as a global, multimodal art and uses cross-cultural rhetorical perspectives and multimodality as interconnected frames to expand how people theorize, practice and teach the art of rhetoric.



Lesliam Quirós-Alcalá is an assistant professor of applied environmental health. She analyzes and characterizes environmental exposures in vulnerable populations, including pregnant mothers, children, low-income communities and occupational populations and how these exposures may impact human health.