



A Tennessee Flagship Carnegie R1 Research Institution

RESEARCH + INNOVATION

NEWSLETTER



2024 Research Celebration Recognizes Success

Celebrating and highlighting the continued growth of research at the University of Memphis.

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Talking Circle for Native American Youth Study

Groundbreaking NIH-funded study to support Native American youth mental health.

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Additive Manufacturing of Titanium Alloys

Assessing the processability of two new alloys, holding significant potential in expanding the market.

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Influence, Disparities and Breast Cancer Outcomes

LCON receives award from the National Institute on Minority Health and Health Disparities.

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CAESER Adds Division of Adaptation and Resilience

Will work to support, educate and advance communities' efforts to prepare and respond to disruptions.

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Johnson Named 2023 NCA Award Recipient

Receives prestigious Orlando L. Taylor Distinguished Scholarship Award in Africana Communication.

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Assessment of Rehydration Solutions

Evaluating the effects of Liquid IV formulas on the BHI, following the consumption of different beverages.

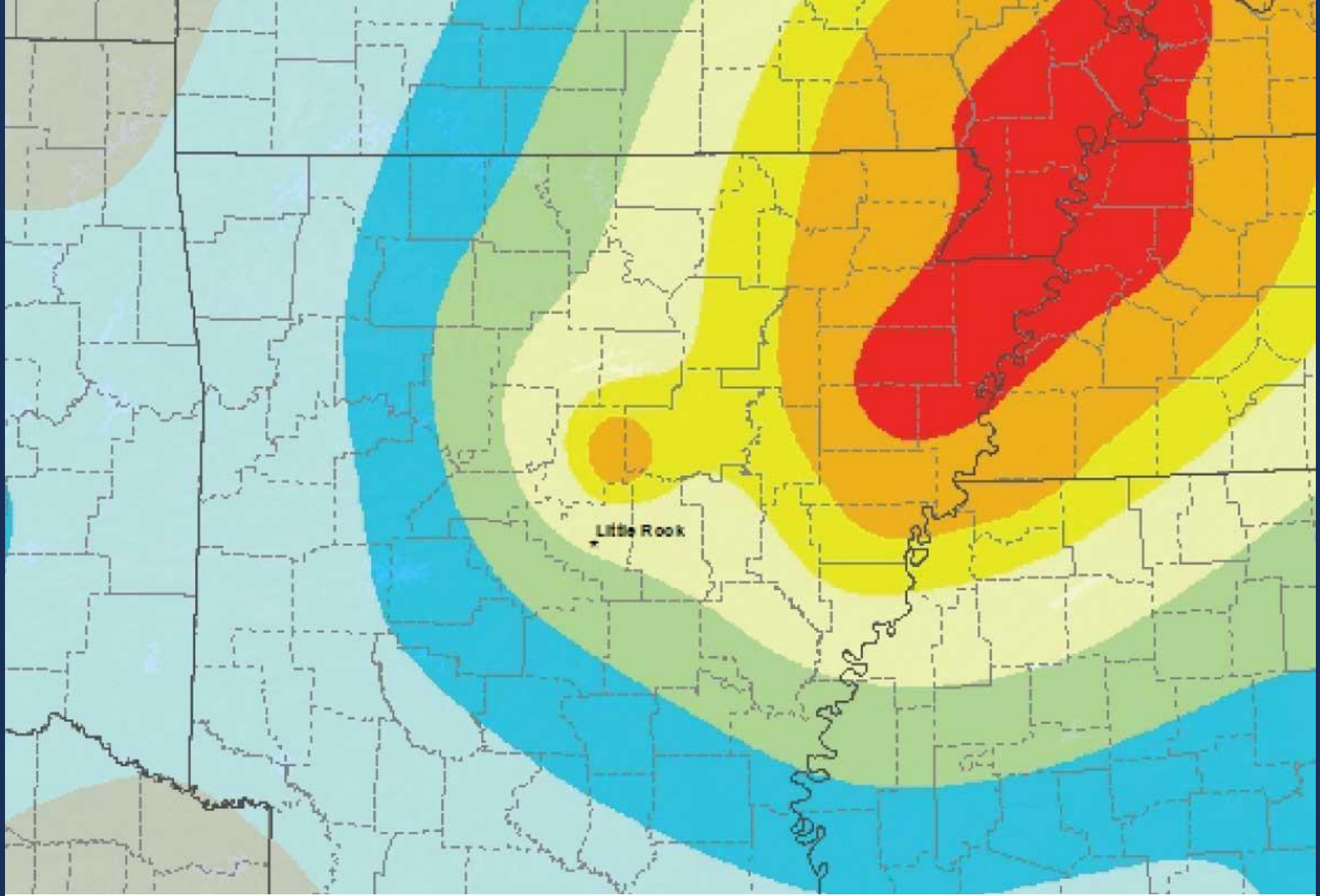
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NASA Award Received for Project: "GA-MER"

Classification of galaxy mergers using the two-dimensional stellar kinematics of nearby galaxies.

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Operations of the Arkansas Seismic Network

Arkansas Geological Survey funds nine state-of-the-art permanent broadband seismic stations.

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$x^3 + x^2 + y^3 + 2^3 + x + yz - 6 = 0$ $g \cdot \text{odf} = \left(\frac{\partial f}{\partial x}, \frac{\partial f}{\partial y} \right)$ $\text{tg } x \cdot \text{cotg } x = 1$ $2x^2yy' + y^2 = 2$ $x_1 = -11p, x_2 = -p, x_3 = 7p, p \in \mathbb{R}$



 $Y_{i+1} = Y_i + b \cdot k_2$ $B = \begin{pmatrix} 2 & 1 & -1 \\ 3 & 0 & 1 \\ 1 & 2 & 0 \end{pmatrix}$ $a^2 = b^2 + c^2 - 2bc \cos \alpha$ $\text{tg } \frac{x}{2} = \frac{1 - \cos x}{\sin x} = \frac{\sin x}{1 + \cos x}$

$\sum_{i=0}^n (p_2(x_i) - y_i)^2$ $\text{tg } 2x = \frac{2 \text{tg } x}{1 - \text{tg}^2 x}$ $\text{tg } x = \frac{\sin x}{\cos x}$ $F_2 = 2x \cdot yz - 1 = 1$

$\iiint_M z \, dx \, dy \, dz = \int_0^{2\pi} \int_0^2 \int_{\frac{1}{2}}^1 r \, n \, dr \, d\theta \, d\varphi$ $\lim_{n \rightarrow \infty} \frac{\sqrt{n^3+1} + n}{3\sqrt[3]{n^2+2n-1}}$ $\lambda x - y + z = 1$
 $x + y + z = \lambda$
 $x + y + \lambda z = \lambda^2$


$2 \arctg x - x = 0, I = (1, 1)$ $\sin^2 x + \cos^2 x = 1$ $\cos 2x = \cos^2 x - \sin^2 x$

$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^4 x \cdot \cos^3 x \, dx$ $\sin 2x = 2 \sin x \cdot \cos x$ $\vec{n} = (F_x; F_y; F_z)$ $a^2 + b^2 = c^2$ $\alpha, \beta, \gamma \in \mathbb{C}$

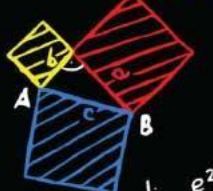
$\cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma = 1$ $\delta(p_2) = \sqrt{0,16}$ $f(x) = 2^{-x} + 1, \epsilon = 0.005$ $e^{-xy}z = e; A \in [0; e; 1]$ $\frac{2x}{x^2+2y^2} = 2 \implies z = \frac{1}{x} \arcsin \frac{\sqrt{2}}{2}$

$\frac{\partial z}{\partial x} = 2; \frac{\partial z}{\partial y} = 0$ $\vec{n} = (F_x; F_y; F_z)$ $\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x} = \frac{2}{5}$ $kx + |b| \neq 0; p \neq 0$ $\sin(x+y) = \sin x \cos y + \cos x \sin y$

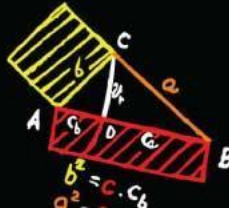
$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 0$ $\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x} = \frac{2}{5}$ $kx + |b| \neq 0; p \neq 0$ $\frac{2x}{x^2+2y^2} = 2 \implies z = \frac{1}{x} \arcsin \frac{\sqrt{2}}{2}$



 $|z| = \sqrt{a^2 + b^2}$ $\lim_{x \rightarrow 0} (1 + \frac{2}{x})^x$ $A = \begin{pmatrix} x & 1+x^2 & 1 \\ y & 1+y^2 & 1 \\ z & 1+z^2 & 1 \end{pmatrix}; x=0, y=1, z=2$ $y' - \frac{\sqrt{y}}{x+2} = 0; y(0) = 1$



 $\sin 2x = 2 \sin x \cdot \cos x$ $\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x} = \frac{2}{5}$ $kx + |b| \neq 0; p \neq 0$ $\frac{2x}{x^2+2y^2} = 2 \implies z = \frac{1}{x} \arcsin \frac{\sqrt{2}}{2}$



 $\eta_1 = \lambda^2 - 3\lambda_1 + 1 + 0$ $\cos \varphi = \frac{(1,0) \cdot (\frac{1}{\sqrt{3}}, \frac{1}{4\sqrt{3}})}{\sqrt{1} \cdot 1}$

Learn Structure Underlying Problem-Solving in Math

ASTRA (AI-based STRategy Discovery) is a tool analyzing math-learning strategies in big-data.

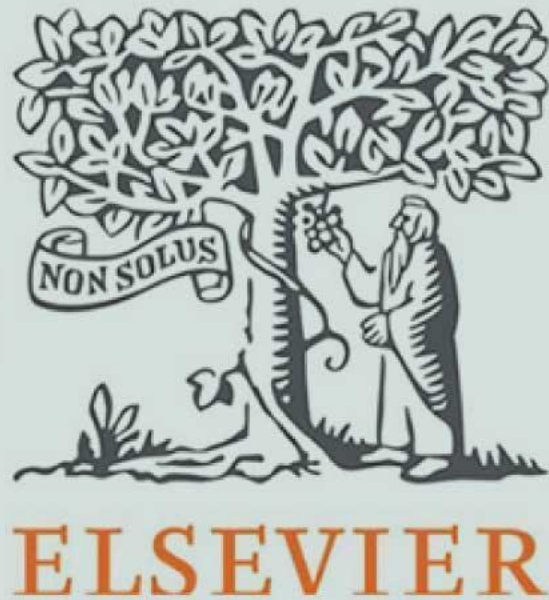
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Research Presented at the Tennessee State Capitol

UofM honors students who presented their research at the Posters at the Capitol event.

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Stanford-Elsevier List of World's Top-Cited Scholars

Stanford-Elsevier ranking of top 2% top-cited researchers includes 42 from University of Memphis.

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NSF Faculty Early Career Development Program

2024 NSF CAREER cohort registration available on UofM InfoReady through March 13.

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Pushing the Growth of External Funding

Fine Arts, Humanities and Social Sciences Support Program funds 16 projects.

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THE
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News by
experts.

The Conversation and UofM Publications

Spotlighting University of Memphis contributor, Kreuz, and his recent article activity.

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Becoming a Peer Reviewer to Advance your Career

Become a peer reviewer for federal agencies while learning best practices and research trends.

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CDC, DOD, EPA, NIH, NSF Funding Opportunities

Recently published federal agencies' funding opportunities outlining upcoming grants.

[See Full List](#)



Calendar of Events March 2024

Research Development, Research Enterprises, UMRF Research Park and FedEx Institute of Technology.

[See Full List](#)

Research Awards February 2024

Dr. John Sabatini awarded \$1,171,855 from the Institute of Educational Sciences with the U.S. Department of Education and \$47,000 from the Trustees of Boston College with the International Association for the Evaluation of Education Achievement.

Dr. Eddie Jacobs awarded \$1,121,937 from the U.S. Army Research Office.

Dr. Daniel Foti awarded \$1,070,000 from the Office of Naval Research.

Dr. Mohd Ali awarded \$947,476 from EnViron Renewable Energy LLC.

Dr. Mitchell Withers awarded \$716,729 from the U.S. Geological Survey.

Dr. Daniel Nascimento awarded \$649,414 from the National Science.

Dr. James Murphy awarded \$313,138 from the National Institutes of Health and \$36,814 from the University of Tennessee Health Science Center.

Dr. Farhad Jazaei awarded \$258,210 from the National Science Foundation.

Dr. Deepak Venugopal awarded \$255,058 from Georgia State University.

Dr. Mary Tucker awarded \$225,000 from the Tennessee Department of Safety.

Dr. Aaron Robinson awarded \$174,194 from the University of Arizona with the United States Army Research Laboratory.

Dr. Subhash Jha awarded \$168,144 from the Tennessee Highway Safety Office.

Dr. Jasbir Dhaliwal awarded \$78,523 from Epicenter.

Dr. Meghan McDevitt-Murphy awarded \$48,622 from the University of Virginia with the National Institutes of Health.

Dr. Jennifer Turchi awarded \$45,807 from the First 8 Memphis LLC.

Dr. Latrice Pichon awarded \$45,000 from the Meharry Medical College with the Center For Disease Control.

Dr. Jill Dapremont awarded \$39,430 from the University of Tennessee Health Science Center with the National Institutes of Health.

Dr. Laura Casey awarded \$33,000 from the Tennessee Department of Mental Health and Substance Abuse Services with the Substance Abuse & Mental Health Services Administration.

Dr. Leslie Luebbers awarded \$23,790 from the Tennessee State Museum for her project "African Art Gallery Redesign Project."

Dr. Jeffrey Marchetta awarded \$36,610 from Vanderbilt University with the National Aeronautics and Space Administration.

Dr. Todd Zoblotsky awarded \$21,922 from the Shelby County Office of Reentry with the U.S. Department of Justice.

Dr. Erin Nelson awarded \$21,253 from the St. Jude Children's Research Hospital – ALSAC.

Dr. Yong Hoon Lee awarded \$20,000 from the University of Illinois Urban-Champaign with the Advanced Research Projects Agency-Energy.

Melissa Marshall awarded \$20,000 from Keep America Beautiful.

Dr. Marie van der Merwe awarded \$16,200 from the Texas A&M University with Advanced Protein Technologies Corps.

Dr. Meredith Ray awarded \$12,000 from the Research Foundation of CUNY with the National Institutes of Health.

Dr. Bernie Daigle awarded \$4,000 from New York University.

** Data reported the 18th of each month. Awards finalized after the 18th will be reported the following month.*

[Full project and award details available here.](#)

Upcoming Events & Announcements



**FedEx Institute of Technology
Technology Serving Humanity Speaker Series**

Welcomes

Dr. Monideepa Tarafdar

Charles J. Dockendorff Endowed Chair
Isenberg School of Management
University of Massachusetts Amherst

As AI algorithms increasingly pervade the underlying digital logic for organizational decision making, there are increasing calls for algorithmic transparency. Transparency is usually taken to mean that the logic of algorithmic learning computations be explained and made apparent to the human user. We problematize the prevailing assumption that such transparency is uniformly beneficial and illustrate its mixed effects. We then develop a novel and alternate conceptualization of transparency that takes into account a wide range of factors and illustrate its application and utility.

Talk Title: "Implementing Transparency in Machine Learning Applications"

Friday, March 15 | 10 AM | FedEx Institute of Technology MPT (103)

[REGISTER](#)



Launch TN and the University of Memphis Hosts Innovator Day @ UofM

Join us for an exciting conversation exploring how Tennessee can support innovation and technology commercialization from local universities and discover how LaunchTN is building a university network across the state to connect startups and researchers, accelerating breakthroughs and turning ideas into reality. Hear from key players in the ecosystem; more details to follow.

Target Audience: Faculty, UofM graduate and student researchers

For questions regarding the event, email Dr. Hai Trieu, director of Technology Commercialization at htrieu@memphis.edu.

Thursday, March 21 | 8:30 AM-4 PM
FedEx Institute of Technology | The Zone & Lobby



FedEx Institute of Technology Distinguished Speaker Series

Welcomes

Dr. Munir Mandviwalla

Professor of MIS, Milton F. Stauffer Senior Research Fellow
Executive Director, Institute for Business and Information Technology
Temple University

Core systems including enterprise-wide applications and infrastructure are critical for most large established organizations. These core systems are the vault of what are arguably the two most important assets of modern organizations – business practices and data. Yet, this treasure is devolving into a morass; overlapping systems that keep expanding, based on a mix of aged and modern technology, current and outdated business practices, held together by a spaghetti of API-enabled calls. Therefore, we believe it important to ask difficult questions about core systems strategy, evolution and value. In this study, we apply the experience of a large established firm to strategize the evolution of core systems. We introduce a framework to elaborate the opportunity and risks of generating business value over time from core systems and escaping the core systems morass.

Talk Title: "The Evolution of Enterprise Systems: The Importance of Transplantability and Tailoring."

Thursday, March 28 | 3 PM | FedEx Institute of Technology MPT (103)

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Are You Ready to Level Up Your Research Knowledge? Membership to LevelUP Micro-Credentialing Program

The University has purchased unlimited membership to the LevelUP micro-credentialing program as a part of our commitment to providing world-class infrastructure supporting our Strategic Plan.

The training is provided through the Society of Research Administrators International (SRA International), a premier global research management society providing education, professional development and the latest comprehensive information about research management to over 5,000 members from over 40 countries.

How to access the portal - [Online System](#)

Recommended browsers for LevelUP courses: Chrome or Firefox

For new SRAI users

Select Sign In in the upper right-hand corner.

User ID: email address

Password: Password1! (temporary password that you update by following instructions below)

Once logged in:

1. Select your name in the upper right corner of the page
2. Select the University of Memphis tab
3. Choose your course(s)

CHANGE YOUR PASSWORD:

1. Login [HERE](#) »
2. Once logged in, select the Account tab > Change Password

For existing SRAI users

User ID: email address

Password: your password

Once logged in:

1. Select your name in the upper right corner of the page
2. Select the University of Memphis tab
3. Choose your course(s)

Should you have any questions related to your access, email grants@memphis.edu or osp@memphis.edu.

SRA INTERNATIONAL



FedEx Institute of Technology
Welcomes

The Mid-South DATA Science Conference
Friday, April 5 | FedEx Institute of Technology

Paper/Poster Submission Deadline: March 8

Acceptance Notification: March 15

Regular Registration Deadline: March 22

The Mid-South DATA science conference brings together the local professional community and future data scientists, creating an environment to foster collaborative research and conversation among Data Scientists in academia, government and industry in the Mid-South and beyond. The conference is now in its fourth year, having previously run under the name [Memphis DATA conference](#) »

We invite submissions that address topics relevant to Data Science, broadly construed:

- Data analysis methods
- Data storage solutions
- Databases and warehousing
- Data engineering
- Data privacy, security and provenance
- Data visualization
- Data quality
- Big data
- Machine learning
- Data mining
- Economics and business analytics
- Data science in education
- Machine learning in Economics and Finance
- Forecasting and simulation
- Health and epidemiology
- Bioinformatics
- Data science in government
- Ethical aspects of data science
- Other relevant topics

[SUBMISSIONS VIA CMT »](#)

Submission Guidelines: Paper submissions should be an extended summary of the paper (2 page max, including references). Papers will be presented in individual sessions or panels. We also invite proposals for panels/thematic sessions/special tracks (again 2 pages, must include theme description and participant details). Poster submissions should be in the form of an abstract (up to 2 pages, including references).

Registration:

Non-Academic: \$85 (By March 22) / \$105 (Late/on-site)

Academic: \$45 (By March 22) / \$65 (Late/on-site)

Student: \$45 (By March 22; first 40 students get FREE registration) / \$65 (Late/on-site)

- All those attending as students MUST Show their student ID at registration.
- Regular registration is open until March 22. Late/on-site registration runs from March 23-April 5.
- Full refunds will be issued up to the early registration deadline, March 22. No refunds will be given thereafter.

Friday, April 5 | All Day | FedEx Institute of Technology

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Research & Innovation Establishes GRANT Template Library to Support Research Faculty

In an effort to expand resources available to research faculty, the Division of Research & Innovation is developing a template library for required documents when submitting to federal grant agencies. These efforts are not only to assist researchers, but also to standardize processes across campus and improve efficiency in internal review of grant submissions by pre-award services. These templates serve as a starting point that will save time, energy, and resources to align your research goals with the priorities of federal funding agencies.

Currently, the following templates are available for applications submitted to the National Science Foundation (NSF):

- Budget Justification
- Data Management and Sharing Plan
- Facilities, Equipment, and Other Resources
- Mentoring Plan
- Letters of Collaboration
- Safe and Inclusive Working Environment Plan.

The template library will continue to expand in the coming weeks with the addition of templates for proposals submitted to the National Institute of Health (NIH) as well. You can find the current available templates [here »](#)

The Division of Research & Innovation also offers resources for [sponsor-specific checklists](#), instructions, and forms available on our website including our internal budget template that must be used in Cayuse records.

If there are additional templates you would like to be provided for NIH, NSF or other federal agencies, reach out to Research Development at researchdev@memphis.edu.



Research Studies

Participation Opportunities

Currently available:

- [Center for Information Assurance »](#)
- [Cognition, Language and Speech Lab \(CLaSLab\) »](#)
- [College of Health Sciences »](#)
- [Department of Psychology »](#)
- [Hearing Aid Research Laboratory »](#)
- [Loewenberg College of Nursing \(Heart Failure Study\) »](#)

If your department or college would like to have its research study participation opportunities listed, email thisweek@memphis.edu.

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