



RCAF 2025

41st Research and Creative Activities Forum



EVENT GUIDE

APRIL 23, 2025

ABOUT RCAF

RCAF stands for Research & Creative Activities Forum, an annual event that offers an invaluable opportunity for graduate and professional students to showcase their academic projects and research. The conference has been designed to provide a platform for students to display their work and discuss their findings with a larger audience. RCAF aims to stimulate intellectual growth and inspire the next generation of researchers and academics. It is an ideal opportunity for students to get feedback, improve their presentation skills, and network with fellow researchers and professionals.

Since its establishment, RCAF has become a highly anticipated event that attracts Mizzou students from various fields of study. It offers a diverse range of presentations providing attendees with a comprehensive overview of current research trends and practices here at Mizzou. This year, the 41st RCAF conference features an array of research topics, from Social and Behavioral Sciences, Life Sciences, Physical Sciences and Mathematics, Engineering Science and Informatics, Artistic Expression, Applied Design and Humanities. This event promises to be stimulating and thought provoking for all those involved.



RCAF 2025

41st Research and Creative Activities Forum

GPC PROGRAMMING COMMITTEE



Ejike Iweha



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Ndubuisi**



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Sophia Raju



RCAF 2025

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GPC PRESIDENT'S SPEECH

Dear Distinguished Colleagues,

As we conclude another remarkable academic year, I am filled with profound gratitude for the exceptional scholarship showcased at the 41st Research and Creative Activities Forum (RCAF). The dedication displayed by graduate and professional students exemplifies the innovative spirit that drives our university forward.

To our poster presenters, your research represents countless hours of dedication and intellectual curiosity. The numerous range of disciplines and methodologies displayed at the 41st RCAF demonstrates the breadth and depth of graduate and professional education at Mizzou.

This event would not be possible without our faculty judges who generously shared their expertise, mentorship, and feedback. Your commitment to nurturing the next generation of scholars deserves our deepest appreciation.

I extend special thanks to our tireless 2025 RCAF organizing committee and the 2024/2025 GPC Executive Board. I especially thank Ejike Iweha, our Director of Programming whose vision and execution made this forum a reality.

Our university administration and the Office of the Provost have provided unwavering support for graduate student research initiatives. We are equally grateful to the Graduate School, the Office of Research, our college deans, and the dedicated faculty and staff who work behind the scenes to create opportunities for scholarly engagement.

The 2024/2025 academic year has challenged us to think critically, collaborate meaningfully, and contribute substantially to our respective fields. As we celebrate today's achievements, we also look forward to the impact our research will have on addressing society's most pressing challenges.

Thank you for your contributions to our scholarly community.

In kindness,

Jessica Osaze

President, Graduate Professional Council (GPC)

ACKNOWLEDGEMENTS

The Graduate Professional Council is grateful to the following faculty, staff, and students for their invaluable support towards making this event a success.

Jeni Hart

Dean of the Graduate School and Vice Provost for Graduate Studies

Heather Hoffman

Assistant Dean for Professional Development and Leadership - Graduate School

Kristen Colbrecht

Director of International Student and Scholar Services

Amy Bohnert

Business & Finance Officer - Office of the Provost

K. Heather Tearney

Show Me Research Week Organizing Committee

JoAnna Chandler

Senior Business Support Specialist - College of Engineering

Jenne Parker

Senior Business Services Consultant - College of Engineering

Ashwin Dhakal

Former Director of Programming - GPC

RCAF 2025

PANEL OF JUDGES

April 23rd, 2025

ENGINEERING SCIENCES AND INFORMATICS

Christopher O'Bryan

HUMANITIES

Ariel Fried

Debora Verniz

LIFE SCIENCES

Qian Li

David Bauer

Victor Outlaw

Enoch N'goma

Sandra Chraprah

Anand Soorneedi

Samuel Hockett

Vasavi Shabrish

PHYSICAL SCIENCES AND MATHEMATICS

Longo Li

Luke Kruse

Ellen Moore

Valerie Carroll

Kanishka Sikligar

Divya Kandanoool

SOCIAL AND BEHAVIORAL SCIENCES

Mansoo Yu

James Flink

Eileen Avery

Aaron Campbell

Yousef Alkilany



RCAF 2025

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April 23rd, 2025

PRESENTERS

HUMANITIES

Projects using methods appropriate to study modern and ancient languages, literature, history, philosophy, religion, culture, journalism, and other humanities disciplines

HUMANITIES

Poster ID	Title and presenter
RCAF-G-01	Dialogue between People with Different Moral Stances and LLMs on Abortion Issue: A Content Analysis via Natural Language Processing <i>Daiyi Jiang</i>
RCAF-G-02	Hey Girlie, Want to Sell Your Soul? How the U.S. Can Counteract Predatory Cult Activities Through the Lens of Fraudulent Business Schemes <i>Georgia Bronson</i>
RCAF-G-03	Persephone in the Twenty-First Century: Adaptation of a Myth <i>Erica Rose Hampton</i>
RCAF-G-04	Healthcare BIM: A Computational Compliance Checking and Visualization Framework to Enhance Accessibility in Healthcare Facilities <i>Md Obidul Haque</i>
RCAF-G-05	Moral and Epistemic Harms of Gratitude Traps <i>Temitope Falokun</i>
RCAF-G-06	Using A Multi-Modal Computational Humanities Approach to Determine Hannibal’s Route Over the Alps <i>Stephen K. Rector</i>

Poster ID	Title and presenter
RCAF-G-07	Grief, Betrayal, and Resilience: A Psychological Study of Ramatoulaye in So Long A Letter <i>Medinat Ajoke Oyedele</i>
RCAF-G-08	<i>Epistemic Solutions from the Non-Oppressed</i> <i>Alice Nyarko</i>

ARTISTIC EXPRESSION

Projects that solve a problem with an original design solution including, but are not limited to, design projects for theater, architectural studies, photojournalism, graphic design, and advertising

ARTISTIC EXPRESSION

Poster ID	Title and presenter
RCAF-E-01	Writing Queerness through Art Experiences <i>Julia Talen</i>
RCAF-E-02	CROWNSHY: a novel (in stories) <i>Kayla Cayasso</i>

ENGINEERING SCIENCE AND INFORMATICS

Experimental and applied research designated to understand and build effective structure, systems, processes, interdisciplinary research area utilizing data science, artificial intelligence, machine learning, and emerging technologies to address scientific and societal issues across diverse data ranging from molecular satellite levels

ENGINEERING SCIENCE AND INFORMATICS

Poster ID	Title and Presenter
RCAF-D-01	Deep Learning in the Field: Vision Transformers and CNNs for UAV-Based Soybean Canopy Analysis <i>Emma Bennett</i>
RCAF-D-02	Mtanh: A Low-Cost Inkjet-Printed Vanishing Gradient Tolerant Activation Function for Neural Network <i>Shahrin Akter</i>
RCAF-D-03	A Comparative Evaluation of Predictive Models for Optimized Droplet Classification in Inkjet Printing <i>Dilruba Alam</i>
RCAF-D-04	Rubber-Modified Asphalt Life Cycle Analysis: Economic, Environmental, and Performance Implications <i>Fatemeh Kazembabaei</i>
RCAF-D-05	Investigation of Single-Event Transient Effects in Enhancement-Mode p-GaN-AlGaN/GaN HEMTs for Space Applications <i>Showmik Singha</i>
RCAF-D-06	Evaluation of Rhizosphere Health at Postharvest with Manure Application and Cover Crop Practices <i>Manobendro Sarker</i>

Poster ID	Title and Presenter
RCAF-D-07	Developing a Translational Approach to Manage Dysphagia in ALS using Optogenetic Neuromodulation <i>Apaala Basak</i>
RCAF-D-08	Shape-Aware Atmospheric River Detection Using Procrustes Loss in Deep Learning <i>Souvik Bag</i>
RCAF-D-09	Next Generation Power Electronics Using AlN/ β -Ga ₂ O ₃ HEMTs Designed by TCAD for High Power Low Leakage and Robust Operation <i>Md Maruf Hossain</i>
RCAF-D-10	Large-Scale DEM Simulation of CT-Scanned Sand Grains for Powder Spreading in Binder Jetting <i>Ibrahim Al Qabani</i>
RCAF-D-11	High-Resolution Ground NO ₂ Estimation using Deep Learning and Satellite Remote Sensing <i>Solaiman Khan</i>
RCAF-D-12	Activities of Daily Living Recognition for Aging Adults Using Non-wearable FIBARO Sensors and Deep Learning Algorithms <i>Nader Abdalnabi</i>
RCAF-D-13	EPSILON: Adaptive Fault Mitigation in Approximate Deep Neural Network using Statistical Signatures <i>Khurram Khalil</i>

PHYSICAL SCIENCES AND MATHEMATICS

Experimental and theoretical
research in the natural sciences
and mathematical sciences,
excluding the life sciences

PHYSICAL SCIENCES AND MATHEMATICS

Poster ID	Title and Presenter
RCAF-C-01	Orbital Edelstein Effect in Monolayer Transition Metal Dichalcogenides <i>Tapesh Gautam</i>
RCAF-C-02	Unravelling the Survival of Ancient Tube-Building Organisms Across the Ediacaran-Cambrian Transition <i>Haley Vantoorenburg</i>
RCAF-C-03	JWST Revealing the Shape and Size of Dwarf Galaxies from 12 Billion Years Ago <i>Gourab Nandi</i>
RCAF-C-04	Insulator-Metal Transition and Magnetic Crossover in Bilayer Graphene <i>Amarnath Chakraborty</i>
RCAF-C-05	Assessment of Silvicultural Management Practices on Ground Flora in Woodland Silvopasture Establishment in the Missouri Ozarks. <i>Emmanuel Barffour Oppong Adjei</i>
RCAF-C-06	Progress Towards a Mechanistic Understanding of Candida Albicans Virulence Factor Candidalysin Polymerization <i>Sadie Lorraine Nickles</i>
RCAF-C-07	Organic Ferroelectric Transistors as Synaptic Devices for Neural Image Recognition Networks <i>Arash Ghobadi</i>

Poster ID	Title and Presenter
RCAF-C-08	Who Dissolves, Who Dies, Who Tells Your Story: Quantifying Bias in Acid Extraction of Small Shelly Fauna <i>Clare Mate</i>
RCAF-C-09	Comparison of Methods Used to Solve the Forward Kinematics Problem for Stewart Platforms <i>Christian Charles Hirni</i>
RCAF-C-10	Polycationic Nanoclay Strategies for the Efficient Sorption of the Anionic Dye Congo Red from Aqueous Solutions <i>Angira Roy</i>

LIFE SCIENCES

Projects that solve a problem with an original design solution including, but are not limited to, design projects for theater, architectural studies, photojournalism, graphic design, and advertising

LIFE SCIENCES

Poster ID	Title and presenter
RCAF-B-01	Fighting FATE (Feline Aortic Thromboembolism): A Retrospective Look at Treatment and Outcomes <i>Scott Miller</i>
RCAF-B-02	PAI-1 As a Mediator of Fibrosis in Murine Sclerodermatous Chronic Graft Versus Host Disease <i>Sahra Gabure</i>
RCAF-B-03	Hypoxia-Tolerance of Neural Function after Hibernation in Bullfrogs: Responses to Graded Oxygen Deprivation and Tissue Metabolic Demand <i>Hafsa Yaseen</i>
RCAF-B-04	Implementing the Dairy Cow as a Novel Study Model to Uncover Cell Migration Pathways Dysregulated in Adenomyosis <i>Patricia Roa-Vidal</i>
RCAF-B-05	Photodistributed Toxic Epidermal Necrolysis Following Ultraviolet Radiation Exposure - A Case Report <i>Sahla Esam</i>
RCAF-B-06	Structural and Biochemical Characterization of p97/BAG-1 Complex Interaction <i>Lois Bansah</i>
RCAF-B-07	Inhibition of AP Endonuclease-1 by O-Benzylhydroxylamine through the Formation of a Covalent Adduct with Abasic Sites in DNA <i>Don Pivithuru Liyanarachchi</i>

Poster ID	Title and presenter
RCAF-B-08	Medicine and Biomedical Applications <i>Mohanned Aqrabawi</i>
RCAF-B-09	Human-induced Pluripotent Stem Cell-derived microglia: a new model for deciphering the non-cell autonomous pathology in C9ORF72 ALS <i>Silvano Bond</i>
RCAF-B-10	IBS-associated Scleromyxedema Controlled with IVIg in Elderly Woman <i>Lea Khoukaz</i>
RCAF-B-11	Optical Imaging of Articular Cartilage of the Knee: Current Status and Clinical Application <i>Alyssa Ashford</i>
RCAF-B-12	\hat{I}^23 -Adrenergic Receptor Agonism Blunts Sympathetic Vasoconstriction in Healthy Young Females <i>Anna Gonsalves</i>
RCAF-B-13	Investigating The Role of N370 Glycosylation In SARS-Cov-2 Cryptic Lineages <i>Barikisu Anna Ibrahim</i>
RCAF-B-14	Structural Characterization of TECPR1 and its Interaction with Lipid Membranes in Non-Canonical Autophagy <i>Ernest Okertchiri</i>
RCAF-B-15	Dermatologic Care for Diverse Populations: Enhancing Primary Care Accuracy of Skin Conditions in Minority Populations <i>Travis Jackson</i>

Poster ID	Title and presenter
RCAF-B-16	<p>Characterization of Biopolymer Based Biodegradable Films with Antimicrobial Properties</p> <p><i>Sumit Singh Sheoran</i></p>
RCAF-B-17	<p>Characterization of Chaperone Dependent Proteasomal Degradation of Tau</p> <p><i>Victoria Arkoh Koomson</i></p>
RCAF-B-18	<p>Therapeutic Potential of Tongue Exercise on Tongue Force/ Strength During Swallowing in a Rodent Model of Hypoglossal (XII) Motor Neuron Loss</p> <p><i>Grace Oti</i></p>
RCAF-B-19	<p>Emergency Medical Services Transport Dynamics in a Tourism Hotspot: A Six-Year Retrospective Study of Traumatic and Atraumatic Emergency Department Transport Trends from Lake Regional Health System Emergency Department in Osage Beach, MO</p> <p><i>Mattaline Piper Killingsworth</i></p>
RCAF-B-20	<p>From Inferiority to Priority: The Untapped Potential of Fragmented Landscapes in Recovering Biodiversity</p> <p><i>Alyssa Smolensky</i></p>
RCAF-B-21	<p>Monitoring LULC Change in Indravati Tiger Reserve: Implications for Tiger Movement and Habitat Fragmentation</p> <p><i>Anam Ahsan</i></p>
RCAF-B-22	<p>Effects of Multimodal Vocabulary Instruction on the Science Vocabulary Knowledge, Text Comprehension and Science Attitude of Middle School Emerging Multilingual Students with Reading Difficulties</p> <p><i>Heba Abdelnaby</i></p>

Poster ID	Title and presenter
RCAF-B-23	Bridging the Gaps: How K-12 Outreach Programs Can Help Diversify Orthopaedics <i>Abdoulie Njai</i>
RCAF-B-24	Genome-Wide Investigation of Recombination in The Presence of B Chromosomes <i>Malika Sharma</i>
RCAF-B-25	Incorporation of Bone Formation Peptide into Nanofibrous Microspheres for Periodontal Bone Regeneration <i>Yingzi Li</i>
RCAF-B-26	3D-Printing Anthropomorphic Human Phantoms from Polymer Solutions <i>Mujtaba Rafique Ghoto</i>
RCAF-B-27	Advancing Electrochemical Gas Sensing: Deep Eutectic Solvents as Alternative Electrolytes <i>Mildred Emegha</i>
RCAF-B-28	Carbon Flux in Root of Medicago Truncatula is Affected by Nutrient Provided Through Arbuscular Mycorrhizal Fungi <i>Prakriti Chand</i>
RCAF-B-29	Compiling Superior Alleles of Agronomic Traits in Elite Rice Using Multiplex Prime Editing <i>Kanika Phagna</i>

Poster ID	Title and presenter
RCAF-B-30	The Role of RECK in Metabolic Alcohol-associated Liver Disease (MetALD) <i>Elizabeth Fiechter</i>
RCAF-B-31	Industrial Hemp Response to Nitrogen Applications <i>Anjeeta Nain</i>
RCAF-B-32	Impact of Flooding Duration on Soybean Production in Northern Missouri <i>Manjot Kaur</i>
RCAF-B-33	Rurality and COVID-19 Vaccine Hesitancy in the United States: A Meta-Analysis <i>Arthur Zacharjasz</i>
RCAF-B-34	Understanding the Influence of Advanced Practice Registered Nurses in High-Performing Nursing Homes <i>Veronica Thompson</i>
RCAF-B-35	Cuscuta: A Parasitic Plant for Decoding Plant-to-Plant Communication <i>Supral Adhikari</i>
RCAF-B-36	Genome-Wide DNA Methylation Analysis of Uterine Endometrium in Dairy Cows with Early Postpartum Metritis <i>Muhammad Ans Afzal</i>
RCAF-B-37	Light-Mediated Synthesis of Azepine-Linked Peptide Macrocycles <i>Hosseini Heidarzadeh Vazifehkhori</i>

Poster ID	Title and presenter
RCAF-B-38	Associations Between Cannabis Use Disorder and Psychiatric Outcomes: A Retrospective Cohort Analysis Using Electronic Health Records <i>Sri Aishitha Koduru</i>
RCAF-B-39	4D Printing of a Bio-adhesive Shape Memory Elastomer for Soft Electronics <i>Sonia Norouzi Esfahany</i>
RCAF-B-40	Sleep and Behavioral Deficits Following Blast-Induced Traumatic Brain Injury <i>Meet S Parikh</i>
RCAF-B-41	A Self-calibrated, Wearable Vital Sign Monitoring Device Enabled by Edge Computing <i>Malinda Jayathilake</i>

SOCIAL AND BEHAVIORAL SCIENCES

Projects using research methods appropriate to human behavior and social systems including, but not limited to, psychology, anthropology, sociology, education, public health, economics, political sciences, communication studies, journalism and business

SOCIAL AND BEHAVIORAL SCIENCES

Poster ID	Title and Presenter
RCAF-A-01	The Impact of NICU Bad News Delivery on Parental Understanding and Coping <i>Wendy Adjei</i>
RCAF-A-02	The Role of Family Engagement in High School Dropout Prevention. Parental Perspectives and Experiences. A Phenomenological Approach <i>Mariam Lujan Benitez Gomez</i>
RCAF-A-03	Bangladesh University of Professionals (BUP) Students Preparedness to Pursue Higher Education in the USA: A Cross-Sectional Survey Study <i>Md Nasir Uddin</i>
RCAF-A-04	Migration and Development: The Role of Education in Shaping the Socio-Economic Impact of Remittances in Sub-Saharan Africa <i>Annabella Saikoom-Dadzie</i>
RCAF-A-05	"I Think They Just Pile Stuff Up on Teachers," A Found Poem About the Teacher Attrition Crisis <i>Breanna Prater</i>
RCAF-A-06	Phenomenological study: Understanding the Perceptions and Experiences of Teachers on Vulnerable Children Support <i>Aida Ismailova</i>

Poster ID	Title and Presenter
RCAF-A-07	Bridging Gaps in Adaptive Apparel Design: Exploring Adaptive Apparel Design Challenges through User-Centered Design <i>Mackenzie Miller</i>
RCAF-A-08	Care Receipt and Self-Perceptions of Aging: The Mediating Role of Perceived Loss of Control <i>Getrude Nyang'au</i>
RCAF-A-09	Navigating Hostility: How American Journalists Experience and Manage Dark Participation <i>Zivile Raskauskaite</i>
RCAF-A-10	Combating AI-Generated Visual Disinformation through Fact-Checking: How Global Journalism Emphasizes the Meta-Competences of Algorithmic Literacy <i>Zhiting Zhang</i>
RCAF-A-11	What Drives Credibility Judgment Toward Health Disinformation in Deepfake Videos? Perspectives of Information Quality, Media Richness and Health Anxiety <i>Linna Kong</i>
RCAF-A-12	Trust is a Work in Progress A Case for Predictive Reliability in Media Transparency on Social Media <i>Shantell Agoreyo</i>

Poster ID	Title and Presenter
RCAF-A-13	Synthetic Speech, Real Consequences: AI-Generated Hate and the Constitution <i>Pranaav Jadhav</i>
RCAF-A-14	Parental Intimate Partner Violence during Childhood and Adolescents' Behavioral Problems: The Mediating Role of Parents' Mental Health and Parenting Practices <i>Dewa Ayu Dwika Puspita Dewi</i>
RCAF-A-15	Lessons Learned from a Global Outbreak: PPE Access and Use in Nursing Homes during the COVID-19 Pandemic. <i>Melissa Lynn Taylor</i>
RCAF-A-16	Exploring Rural Sciences Teacher Agency in Addressing Gender and Sexual Diversity-Inclusive Teaching <i>Austin Gaskin</i>
RCAF-A-17	Role of Family Resilience, Parental Aggravation, and Adverse Childhood Experiences on School Readiness <i>Prabhath, Palle Waththage</i>
RCAF-A-18	Missouri Elementary Music Teachers' Perceptions of General Music Methods and Their Preparation to Teach Elementary Music: A Pilot Study <i>Jason Han</i>

ABOUT GPC

The Graduate Professional Council (GPC) is the official student government for all graduate, professional, and post-baccalaureate students at the University of Missouri (MU) in Columbia, Missouri. Since 1982, it has represented all the departments of the Graduate School and the schools of Business, Public Affairs (previously Public Administration), Law, Medicine and Veterinary Medicine. GPC is the voice of graduate and professional students to many of the decision-making bodies at MU, including the Board of Curators and numerous faculty committees. Another function is the development of events such as the Research and Creative Activities Forum to showcase the innovations and talents of graduate and professional students. GPC also brings you captivating social events to give you an opportunity to meet fellow graduate and professional students.

The Graduate Professional Council is the representative umbrella organization for all graduate and professional students to the administration of the University and UM Board of Curators. Although the school councils have influence on the decisions of the individual schools, only GPC has influence in general policy decisions by the University or UM System affecting all graduate and professional students (issues such as fees, tuition, and health insurance).

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