



42nd Research and Creative Activities Forum, Fall 2025

EVENT GUIDE

24th OCTOBER, 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 42nd 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 and Humanities. This event promises to be stimulating and thought-provoking for all those involved.



RCAF, Fall 2025

42nd Research and Creative Activities forum

GPC President's Message

It is an honor to welcome you to the **Research and Creative Activities Forum (RCAF) Fall 2025**. This signature event reflects the University of Missouri's enduring commitment to academic excellence, interdisciplinary collaboration, and the advancement of graduate and professional scholarship.

Historically held in the spring, RCAF will now be hosted in the **fall semester** to broaden participation, prevent overlap with other major research conferences, and provide students an earlier opportunity to present their work. This makes 2025 a truly unique year, as we proudly host **two RCAF events**, one in the spring and one in the fall.

RCAF serves as a vibrant platform for students to share innovative ideas, engage in scholarly dialogue, and connect across disciplines. The projects showcased today represent the creativity and intellectual rigor that define Mizzou's graduate community. Whether your work advances scientific discovery, explores social systems, or celebrates artistic expression, your contribution enriches our shared pursuit of knowledge and impact.

I extend sincere appreciation to the organizing committee, faculty judges, and mentors for their dedication, and to each presenter for the courage and passion behind your research. Together, we exemplify the collaborative spirit that drives innovation at Mizzou and beyond.

Warm Regards,

Felix Michael Oguiche

President, Graduate Professional Council



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ACKNOWLEDGEMENTS

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

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PANEL OF JUDGES – RCAF, FALL 2025

24th October, 2025

Brielle Thompson

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Kathryn Rittenhour

Johana Goyes Vallejos

Sabrina Michael

Maria Mills

Akanksha Balha

Kamal Arora

LIST OF PRESENTERS

ARTISTIC EXPRESSION		
POSTER ID	PRESENTER NAME	TITLE
RCAF01	Kofi Opam	Vampires Will Never Hurt You: A Horror Memoir
RCAF02	Mary Claire Sarafianos	Someone should apologize to Alice Smith
ENGINEERING SCIENCE AND INFORMATICS		
RCAF03	Vani Seth	EmpathAI: A Trustworthy and Secure Conversational Agent for Mental Healthcare
RCAF04	Samrat Kumar Dey	Explainable AI for Segmentation and Classification of Liver Cirrhosis on T2-Weighted MRI
RCAF05	Zahida Begum	3D-Printed Scaffolds Reinforced with Natural Mineral (Asphaltum Punjabianum) for Skin Tissue Engineering
RCAF06	Sumit Singh Sheoran	Comparative study on the formulation and characterization of protein-based active packaging films with multifunctional properties
RCAF07	Apaala Basak	Translational Optogenetics in ALS: Preserving Swallowing Function via Hypoglossal Neuromodulation in SOD1 Mice
RCAF08	Sara Shojaei	Adaptive Structure-Aware Connectivity-Preserving Loss for Improved Road Segmentation in Remote Sensing Images
RCAF09	Emma Bennett	Quantum Graph Neural Networks for Aerial Navigation
RCAF10	Manobendro Sarker	Impacts of Continuous Manure Application on Soil Health and Crop Performance
RCAF11	Mahady Hasan Rayhan	Adaptive Content Engine: Real-Time Personalization in VR Education using Reinforcement Learning
RCAF12	Saad A. Alsamraee	Long-Term Electricity Demand Forecasting of University Campuses Based on Advanced Deep Learning Artificial Neural Network Algorithms
RCAF13	Showmik Singha	The Angle Effect: Single-Event Transients in β -Ga ₂ O ₃ MOSFETs for Space-Power Applications
RCAF14	Pegah Sepehri	Integrating Economic and Sustainability Factors in Building Design through Data-Driven Surrogate Modeling
RCAF15	Anindita Laz Banti	GIS-Based Settlement Vulnerability Assessment in Rohingya camp, Cox's Bazar, Bangladesh
RCAF16	Rogelio Muneton	A Phase-Field Formulation for Fracture Modeling of Rate- and Temperature-Dependent Materials
RCAF17	Juan Pablo Giraldo-Isaza	A local approach to stress-constrained topology optimization of multi-material structures
RCAF18	Amir Erfan Zareei Shams Abadi	Temporal and Profession-Specific Trends in HIV Case Queries Within the Show-Me ECHO Program
RCAF19	Md Yekra Rahman	A 1 MHz GaN-Based Transformerless Resonant Superimposed Quadratic Converter for 48 V-to-PoL High-Current AI Power Delivery

RCAF20	Gracey Henry Jesudasan	Content Analysis of Alcohol and Breast Cancer Risk Information from Generative AI Chatbots
RCAF21	Akshata Hegde	MintOmics: Multi-omics Integration and Prediction of Oviductal Responses Using Machine Learning
RCAF22	Jeffrey Appiagyei	Automated Diagnostic Analysis of Low-Concordance Dermatology Cases Using a Multimodal AI Model
RCAF23	Meftah Uddin	Data Driven Decision: Reducing Simulation Runs in Early-Stage Building Design
RCAF24	MD Obidul Baque	AI-Powered Automated Compliance Checking in BIM and Visualization to Enhance Accessibility in Healthcare Facility Design
RCAF25	Ibrahim AI Qabani	High-Performance Simulations of Raw Sediment Behavior in 3D Printing
HUMANITIES		
RCAF26	Mariana J. Guzman	Preserving Indigenous Identity in the Early Modern Americas
RCAF27	Jefferson Ting	The Stripes of Glory We Wear: Reflections of the Legal Role and Intricacies of Citizenship in the History and Foundation of the Malaysian State
RCAF28	Fateme Goudarzi	The “Cordon à nœuds” in Rosalie l’Infâme: Memory of the Resistance of Enslaved Women and a Support for Lisette’s Liberating Imagination
RCAF29	Corinne Silvestre	Makandal, true story, in Mercure France
RCAF30	Stephen K. Rector	A Geospatial Data Science Approach to Hannibal’s Route through the Alps
LIFE SCIENCES		
RCAF31	Fangfang Li	Investigation of the interaction mechanism between purple corn anthocyanins and amino acids and its impact on anthocyanin stability
RCAF32	Riti Shrestha	Characterization of ATPase DotO in Dot/Icm T4SS of Legionella Pneumophila
RCAF33	Meet S Parikh	Optogenetic Stimulation of The Basal Forebrain After Traumatic Memory Extinction Underscores The Necessity of Sleep for The Consolidation of Extinction Learning
RCAF34	Blessing Abraham Ademola	Unlocking Economic Potential for Soybean Grain Quality Through Segregated Harvesting
RCAF35	Ellen Mazalale	Environmental Exposures Accelerate Proteomic Aging in Nothobranchius Rachovii
RCAF36	Hector Nava Trujillo	Effect of Bovine In Vitro Embryo Production on Fetal IGF System Signaling
RCAF37	Anna Gonsalves	Respiratory Modulation of Sympathetic Activity During Hypoxia And Impact of Obesity
RCAF38	Isaac Mensah	Developing Super-resolution Imaging Techniques to Elucidate AAV’s Cell Entry Mechanism and Interactions with GPR108
RCAF39	Seth Twum	Polyclonal Antibody Recognition and Immune Neutralization of AAV Gene Therapy Vectors
RCAF40	Supral Adhikari	Uncovering Arabidopsis Root Defense: Transcriptomics and Mutant

		Screening Against Broomrape, <i>Phelipanche aegyptiaca</i>
RCAF41	Samuel Martin	A New Model of Cardiovascular-Kidney-Metabolic (CKM) Syndrome in Naturally Aged Swine
RCAF42	Godfred Siaw Kumi	Investigating the role of AAV2 VP1u in Cellular Trafficking
RCAF43	Asha Kaluwella Mudalige	Methionine Sulfoxide Reductases Play a Central Role in Arabidopsis Seed Proteome and Metabolic Homeostasis
RCAF44	Samantha Norris	Overcoming Early-Life Lethal Phenotypes to Develop a Distinct Mouse Model for Baker-Gordon Syndrome Using CRISPR-Cas9 Gene Editing Approaches
RCAF45	Moses Ataben	Schwann Cell Proliferation in the Adult PNS Challenges the Long-Term Durability Of AAV Gene Therapies
RCAF46	Uzoamaka Mbionwu	Sex-related Differences in Diabetes, Obesity, and Dyslipidemia as Cardiovascular Disease Risk Factors
RCAF47	Raquel Young	Interpreting Rabies Titer Testing and Pet Travel Regulations: A Mixed Methods Study of Public Health and Professional Understanding
RCAF48	Ty Montgomery	Identifying PRDM Family Members Potentially Involved in Epigenetic Reprogramming after Fertilization in Porcine Embryos.
RCAF49	Md Selim Mahbub	Spermine Catalyzes Isomerization of The Sugar-Phosphate Backbone to a Non-Canonical DNA Backbone at an Apurinic/Apyrimidinic Site In Duplex DNA
PHYSICAL SCIENCES AND MATHEMATICS		
RCAF50	Clare Mate	A Tale of Two Scalids: Priapulid Affinity with a Cambrian Cone
RCAF51	David Beckwitt	Quantitative X-ray Diffraction Analysis of 2D-Oriented Powders with Area Detectors
RCAF52	Nancy Ihechu	Anti-Parkinson's Therapeutic Discovery- A Computational Approach
RCAF53	Emmanuel Barffour Oppong Adjei	Nitrogen Effects on Forage Utilization and Economic Returns in Grazing and Haying Systems
RCAF54	Emily Hayden	Conformer Distribution of Normal Propyl Cyanide in Neat and Water-Rich Ices Probed by Broadband Rotational Spectroscopy
RCAF55	Andrew Crouch	Hot on the Heels of Extinction: Tracing Post-impact Warming of the Brazos River Region Through Oxygen Isotopes
RCAF56	Tapesh Gautam	Study of Orbital Hall Effect in Topological Graphene
SOCIAL AND BEHAVIOURAL SCIENCES		
RCAF57	Zeinab Parishani	What Amplifies Health Information-Seeking Challenges Among International Students in Rural Midwest U.S.?
RCAF58	Denise M. Brown	Explaining the Decline of Dominant Parties in New Democracies: Evidence from South Africa
RCAF59	Miranda V Brunn	Quantifying Narrative Characteristics and their Association with Individual and Relational Health: A Test of Communicated Narrative Sensemaking Theory
RCAF60	Md Rokibul Hasan	The Morality–Creativity Paradox: When AI Turns Brand Innovation into Crisis
RCAF61	Sara Mostowfi	Uncovering Metacognition Awareness in AR Learning Environment via

		Gaze Transition Entropy
RCAF62	Laura	Re-membering as Decolonial Praxis: Nigerian Youth Navigate Language, Culture and Global Black Belonging
RCAF63	Wenting Sun	Department of Human Development and Family Science, University of Missouri
RCAF64	Nanan Nuraini	Functional Connectivity and Volume of the Amygdala as Predictors of the Response to Propranolol for Anxiety in Autism: A Pilot Study
RCAF65	Minervah Wathke	An Expository into the Effects of State Labor Laws on Union Density & Public Opinion of Labor Unions in the United States
RCAF66	Jeffrey Bodeen	Context of Eye Health: Social Determinants of Health Impact on Community Disease Burden Through Multiple Disease Models
RCAF67	Audrey Miller	Health Gaps Across State Lines: Measuring Inequities Using Comparative Data
RCAF68	Nwanyinna Shoemaker	Community Leadership Development for Social Change: A Socio-Demographic Comparative Analysis
RCAF69	Friederike Albrecht	Participatory Group Discussions of the 'Viviendo Bien' Study: Focus on Methods
RCAF70	Robin Vanderbeck	What's in Your Ice Machine?
RCAF71	I Dewa Ayu Dwika Puspita Dewi	Early Childhood Material Hardship and Young Adult Mental Health
RCAF72	HongYi Shih	Identifying Barriers in Healthcare Facilities: Perceived Accessibility of Hospital Toilets.
RCAF73	Daniel Yuhasz	Seed Sovereignty as an Ontological Approach to Food System Transformation

BOOK OF ABSTRACTS



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