

ALUMNI KEYNOTE SPEAKER

DR. RANDI WILLIAMS

AI RESEARCH DIRECTOR AT MIT

B.S., '16, UMBC, COMPUTER ENGINEERING
PH.D., '24, MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT),
MEDIA, ARTS, AND SCIENCES PERSONAL ROBOTS GROUP

Dr. Randi Williams is an educator, tinkerer, and passionate agent of change harnessing technology to empower communities. She currently is the Program Manager at the Algorithmic Justice League while preparing to join the faculty at Carnegie Mellon University Human-Computer Interaction Institute.

Dr. Williams helps equip researchers, policymakers, and grassroots changemakers to responsibly use AI for meaningful social impact. She has spearheaded initiatives like the MIT RAISE AI Playground and Day of AI, which have made AI instruction available to thousands of educators worldwide. Her groundbreaking work on social robot learning companions (PopBots) and grade school AI + ethics curricula, (How to Train Your Robot) have garnered recognition and accolades from leading organizations such as Microsoft Research, LEGO, and the National Science Foundation and have been featured in prominent media outlets, including *The Atlantic*, *Wired*, and *MIT Technology Review*.

Dr. Williams earned her Ph.D. ('24) and Masters ('18) from MIT in the Personal Robots Group at the MIT Media Lab. She earned her Bachelor's ('16) in Computer Engineering as a Meyerhoff Scholar, Honors College student, and CWIT affiliate at the University of Maryland, Baltimore County where she worked with Dr. Nilanjan Banerjee in the Mobile, Pervasive, and Sensor Systems Laboratory on the Inviz project and Flex Gloves projects and founded HackUMBC. She is a founding director of the Boston Chapter of Black in Robotics. Previously, Dr. Williams worked at Microsoft Research, NASA Jet Propulsion Lab, and MIT Lincoln Lab.

AGENDA

TIME	EVENT	LOCATION
9:00 am - 10:00 am	Wisdom Institute Breakfast	UC 312
10:00 am - 11:00 am	Morning Poster Session I	UC Ballroom
11:00 am - 12:00 pm	Morning Poster Session II	UC Ballroom
10:00 am - 3:00 pm	Video Game Exhibits	UC Ballroom
9:00 am - 12:00 pm	Morning Concurrent Oral Presentations	UC 310, 312, 204, UC Ballroom Lounge
12:00 pm - 1:00 pm	Alumni Keynote Speaker: Dr. Randi Williams Introduced by Dr. Lara Martin	UC 312
1:00 pm - 2:00 pm	Afternoon Poster Session I	UC Ballroom
2:00 pm - 2:30 pm	Multidimensional Mural	UC Ballroom Stage
2:30 pm - 3:30 pm	Afternoon Poster Session II	UC Ballroom
1:00 pm - 4:00 pm	Afternoon Concurrent Oral Presentations	UC 310, 312, 204, UC Ballroom Lounge

UNDERGRADUATE RESEARCH AT UMBC

Getting involved in research as an undergraduate student can help you network with faculty both on and off campus, strengthen your resume for graduate and professional school and employment, support your artistic vision, and help you apply what you’ve learned in the classroom to a research setting. UMBC has several programs that affirm UMBC’s commitment to the twin goals of research and a distinctive undergraduate experience:

UNDERGRADUATE RESEARCH AND CREATIVE ACHIEVEMENT DAY (URCAD)

URCAD features research, scholarship, and creative work carried out by UMBC undergraduates. Student work is shared through oral presentations, posters, artistic exhibits and performances, and film.

UNDERGRADUATE RESEARCH AWARDS (URA)

URAs provide up to \$1,500 to undergraduate students to support their research or creative work with a UMBC faculty mentor on an original project. UMBC students of all years and disciplines are invited to apply. Applicatinos are now open and are due by May 3, 2024.

UMBC REVIEW (JOURNAL OF UNDERGRADUATE RESEARCH)

Published annually, this peer-reviewed journal features academic papers written by UMBC undergraduates. Pick up a free copy in the UC lobby today!

TRAVEL AWARDS

Whether online or in person, students who are invited to present their work at a conference or festival may apply for funds to support their travel and registration.

SUMMER RESEARCH

Assistance with finding and applying to summer research opportunities, including REUs.

PRESTIGIOUS SCHOLARSHIPS

Support for students applying to prestigious scholarships such as Rhodes, Gates-Cambridge, Knight-Hennessy, Marshall, Truman, Goldwater, and others.



Consistent with its commitment to academic freedom, UMBC does not restrict the topics of inquiry that can be accepted for URCAD, the conclusions that are reached in student work, or the representations chosen by the student and mentor for that work. With the approval of their mentors, students may apply to present any mentored research, scholarship, or creative work completed while they are UMBC undergraduates. A mentor-approved and committee-approved abstract describing the work and its intellectual context is required. Approval to present work at URCAD is given by the faculty of the URCAD committee.

ur.umbc.edu

UNDERGRADUATE RESEARCH

Division of Undergraduate
Academic Affairs
216 AOK Library
UMBC, 1000 Hilltop Circle
Baltimore, MD 21250

FOR MORE INFORMATION, CONTACT:

Dr. April Householder
Director of Undergraduate Research
and Prestigious Scholarships
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PROGRAM



UNDERGRADUATE RESEARCH
AND CREATIVE ACHIEVEMENT DAY

Featuring Research, Creative Work,
Performances, and Exhibits by UMBC
Undergraduate Students

April 16, 2025
9:00 am - 4:00 pm
University Center

urcad.umbc.edu

SPECIAL EXHIBITS

VIDEO GAMES

(MENTOR: MARC OLANO, UC BALLROOM, ALL DAY)

BULLET BLOX

Jason Cooke, Fairouz Martinez-Khaffagi, Kelly Nguyen, Brandon Nguyen, Matt Pham, Diondre Roane, Nideesh Shanmugam Bhuvaneswari, Jet Thompson, and Felicity Zin

GO! GACHA

Ru Etheridge-May, Wan Aggreysmith, Colby Frashure, Lyle Henderson, Dawei Huang, Sormeh Jaribion, Scott Serafin, Arji Smith, Gabriel Sternberg, and Trent Yuhas

KING SCRIBBLE

Evan McRae, Steven Nguyen, Ginger Sealy, Brian Lawser, Justin Gaylord, Jay Cina, Anthony Bonilla Duron, and Rowan Barr

WAITING AT THE DOOR:
A GAME ABOUT GRIEF,
GROWTH, AND HEALING

Olivia Patterson, Jackson Reichardt, Charles Vaudreuil, Dara Oludare, Nga Nguyen, Brandon Krupka, Adit Gunaseelan, Daryl Colosi, and Aidan Brown

AUDIO-VISUAL EXHIBIT

(UC BALLROOM STAGE, 2:00-2:30 PM)

MULTIDIMENSIONAL MURAL:
A LIVE PERFORMANCE OF ART,
SOUND, AND MOVEMENT

Marelen Soto, David Cobb, and Maria Fernanda Diaz - Visual Arts
Mentor: Prof. Corrie Parks

PIANO PERFORMANCE

(UC BALLROOM LOUNGE, 1:40-2:15 PM)

TAKING BACK THE PIANO

Ida Dierker - Music
Mentor: Prof. Lisa Cella

ART INSTALLATION

(FINE ARTS BUILDING 110, 2:00-3:00 PM)

MIGRANTE NG BAYAN,
NGAYON AY LULALABA
(MIGRANTS OF OUR COUNTRY)

Parvata Kirthivasan - Visual Arts
Mentors: Irene Chan and Dr. Camee Maddox-Wingfield

ART EXHIBIT

(FINE ARTS BUILDING, FIRST FLOOR HALLWAY, ALL DAY)

HUMANIZE: STUDENT-LED
GALLERY EXHIBITION EXPLORING
THE THEME OF IDENTITY

Thalia Añora - Visual Arts & INDS
Mentor: Prof. Corrie Parks

FILM

(UC BALLROOM LOUNGE, 2:20-2:35 PM)

BALUCHISTAN:
A SILENT RESISTANCE

Ayan Shaikh - Global Studies
Mentor: Prof. Zareen Taj

ORAL PRESENTATIONS SCHEDULE

1ST CONCURRENT ORAL PRESENTATIONS (MORNING SESSION)

TIME	UC 312	UC 310	UC 204	UC BALLROOM LOUNGE
9:00-9:15 am	Wisdom Institute Breakfast			Ria Murphy Twins– Interpreting the Unique Dynamic of Being a Twin and How it Affects the Individual Mentor: Prof. Ann Sofie Clemmenson
9:20-9:35 am	Wisdom Institute Breakfast	Jameelah Destry The Effect of Temperature on Asexual Reproduction in Hydra Vulgaris Mentor: Dr. Aide Macias-Muñoz	Jacob Lombardo Next-Generation Scalable and Environmentally Friendly MXene-Tetrahedrite Flexible Thermoelectric Generators Mentor: Dr. Deepa Madan	Rachael Tyler Artistic Growth: A Study into Cultural Exposure and The Discovery of New Levels of Creativity and Expression Mentor: Prof. Ann Sofie Clemmenson
9:40-9:55 am	Wisdom Institute Breakfast	Kieran Soliday Optimized iNeuron Reprogramming from Dermal Fibroblasts for Investigating Pathogenic Variants in Rare CNS Diseases Mentor: Dr. May Christine Malicdan	Ayeoriste Tuedon Annotation Of Bacteriophages Hazuandazu and Tubberson: A Study Abroad Experience Mentor: Dr. Steven Caruso	Kyle Casamento Making Gold from Lead: How Glen Burnie High School Students and Staff Navigate Disinvestment Mentor: Dr. Sarah Fouts
10:00-10:15 am	Kat Gill Moms for Liberty: A Historical and Local Perspective on Conservative Activism in Education Mentor: Dr. Earle Brooks	Andrew Opincar Sticky Fingers: How Heparan Sulfate Proteoglycan Processing Enzymes Mediate Drosophila Melanogaster Border Cell Migration Mentor: Dr. Michelle Starz-Gaiano	Briana Young Gadd45ba, A Regulator of Blood Cell Production in Response to Anoxia Mentor: Dr. Rachel Brewster	Tyler Brown Building Empathy and Awareness Through Cultural Sensitivity Training: Insights from an Interactive Approach Mentor: Dr. Kerri Evans
10:20-10:35 am	Maia Turman Cooke Resilient Hearts: Literary Portrayals of Lauryn Hill's Self-Love and Resistance Against Intimate Consequences Mentor: Dr. Earle Brooks	Christina Chaffman Cultural Crossroads: Exploring North American Food Cultures (1600-1800) Mentor: Dr. Melissa Blair	Gabriel Otubu Ndrg1b Regulates N-cadherin Trafficking in Response to Hypoxia Mentor: Dr. Rachel Brewster	Allison Smock Mexican Feminist Movements and the Role of Social Media: Civic Participation and Transnational Solidarity Mentor: Dr. Thania Munoz
10:40-10:55 am	Jordan Wesley Seeking the Beyond: An Ethnographic Exploration of Meditation and Contemplative Practices on College Campuses Mentor: Dr. Bambi Chapin	Jaden Gallman Becoming a Regulatory Agent in a Digital Space: An Analysis of Viral X (Twitter) posts about Fatness Mentor: Dr. Carole McCann	Ajeetha Arduchadran Investigating the Mechanisms underlying Convergence of the Neural Folds" Mentor: Dr. Rachel Brewster	Ahmad Hussin Overexpression of Carbon Concentrating Mechanism Genes in Chlamydomonas Reinhardtii Mentor: Dr. Stephen Miller

11:00-11:15 am	Jacob Brunk Unsettling Reflections: Encountering Symbol Systems in Inter-tradition Religious Conversion Mentor: Dr. Bambi Chapin	Frank Rodriguez The Wild Men of Wirral: Racism Toward the Welsh in Sir Gawain and the Green Knight Mentor: Dr. Kathryn McKinley	Timothy Winans, John Quach, and Evan Reynolds B-Type Stars in M45: Hydrogen Balmer Absorption, Isochrone Fitting, and Radial Velocity Discrepancies Mentor: Dr. Kenny Diazeguigure	Julia Sunnarborg Evolution Beyond the Central Dogma Mentor: Dr. Stephen Freeland
11:20-11:35 am	Siskind Oshry Nakahara, Dazai, and Edogawa: The Influence of Western Literature on Japanese Authors in the Early 20th Century Mentor: Dr. Julie Oakes	Halima Jama Assessing Muslim Women in Medieval European Literature: Problems and Questions Mentor: Dr. Kathryn McKinley	Jessica Hoffman Characterizing the Role of Zinc Finger Protein 217 in Ovarian Carcinogenesis Mentor: Dr. Achuth Padmanabhan	Nardos Kebede Ethiopian Israelis: The Generational Evolution of Cultural Identity and its Impacts on Integration Mentor: Dr. Brigid Starkey
11:40-11:55 am	Sean DiGiorgio Directing a Staged Reading at the Kennedy Center American College Theatre Festival Mentor: Prof. Nigel Semaj	Lilli Malone The Salem Witch Trials: A Case Study for Cultural Disaster Mentor: Dr. Amy Froide		

12:00-1:00 PM - KEYNOTE SPEAKER: DR. RANDI WILLIAMS - UC 312

2ND CONCURRENT ORAL PRESENTATIONS (AFTERNOON SESSION)

TIME	UC 312	UC 310	UC 204	UC BALLROOM LOUNGE UC BALLROOM STAGE
1:00-1:15 pm		Carrington Cline, Tanzila Malik, and Katlynn Seghetti Spectrum in the Spotlight: Examining Neurodiversity on Screen Mentors: Lauren Allen, Zoe Brown, and Amelia Meman	Shoyab Shaik Using Photophysical Properties to Select Fluorophores for Plasmonic Current Mentor: Dr. Chris Geddes	Ryan Supplee Invisible Disability and Exploitation in Medieval Lamporecchio: Masetto and the Nuns Mentor: Dr. Kathryn McKinley UC BALLROOM LOUNGE
1:20-1:35 pm	Christina Chaffman Colonial Crisis and Transformation: Effects of the 1752 Hurricanes on South Carolina's Political and Economic Structures Mentor: Dr. Amy Froide	Ash Acuña, Julia Garcia, and Isabelle Person Red, Blue, and Latino: How Sex Education Disparities Affect Teen Pregnancies Mentors: Dr. Lauren Allen, Zoe Brown, and Amelia Meman	Elana Frazier Evaluating Directional Cues that Affect Migratory Preference in Border Cell Migration Mentor: Dr. Michelle Starz-Gaiano	
1:40-1:55 pm	Megan Gould Hitler Youth and Child Indoctrination: An Analysis of Guilt and Responsibility Mentor: Prof. Brian Van Wyck	Ada Glaser Goals and Motivations of Baltimore Early Intervention Providers Mentors: Dr. Jaysree Jani, and Dr. Mata-McMahon	Rileigh Mansfield Parameter Identifiability, Sensitivity, and Estimation for a Cholera Model Mentor: Dr. Kathleen Hoffman	Ida Dierker Taking Back the Piano Mentor: Prof. Lisa Cella UC BALLROOM LOUNGE (1:40-2:15 pm)
2:00-2:15 pm	Preston McMillian II Tourism in Tiny Towns: An Ethnographic Study of Old Ellicott City Mentor: Dr. Bambi Chapin	Sara Humphries Unreliable Narration: Understanding Schizophrenia through Art Mentor: Prof. Corrie Parks	Ben Bazarsuren Designing Structural Members using Bio-Inspired Design Primitives Mentor: Dr. Paris Von Lockette	Marelen Soto, David Cobb, and Maria Fernanda Diaz Multidimensional Mural: A Live Performance of Art, Sound, and Movement Mentor: Prof. Corrie Parks UC BALLROOM STAGE (2:00-2:30 pm)
2:20-2:35 pm	Keegan Schiller Rousseau's Republicanism Mentor: Dr. Michael Nance	Joy Ware Cultural Dimensions Represented in Panama Mentor: Dr. Sidas Saulynas	Deeya Mistry Sex Differences in Stress Susceptibility and Synaptic Protein Expression Mentor: Dr. Tara LeGates	Ayan Shaikh Balochistan: A Silent Resistance (film) Mentor: Zareen Taj UC BALLROOM LOUNGE
2:40-2:55 pm	Jonathan Veale Monsters after Midnight: Fear of the Unknown within Monster Horror Mentor: Prof. Robert Pawloski	Maeva Kaunan Empowering Hispanic/Latinx Students in STEM: The Role of Resources, Community, and Belonging Mentor: Dr. Shuyan Sun	Lucy Viechnicki A Novel GPCR Autoantibody Associated with Cancer Recurrence Mentor: Dr. Neal Fedarko	
3:00-3:15 pm	Jack Horvath Identifying the Impact of Restoration Through the Lens of Historical Musical Instrument Repair Mentor: Prof. Matt Belzer	Evalynn Ellison Ultrasound-Responsive Phospholipid-Coated Microbubbles for Controlled Drug Delivery Across Mucosa Mentor: Dr. Cana	Haneul Kim Amplifying Plasmonic Current using Gold Colloids Mentor: Prof. Christopher Geddes	
3:20-3:35 pm	Samya Sharma Cinema, Censorship, and Commerce: The Soviet Film Industry and its Relation to the Nation's Economic Health Mentor: Prof. Vira Zhdanovych	Mike Mentley RDS-1, Reef, and Sarmat: Russia's Nuclear Weapons Then and Now Mentor: Prof. Vira Zhdanovych	Arushi Bhattacharyya Circumventing Tumor Heterogeneity: Data Harmonization and Clinical Trial Design Mentor: Prof. DoHwan Park	

A MESSAGE FROM THE DEAN

Dear Participants and Guests,

Undergraduate research and creative achievement matters!

At UMBC, the degree to which we encourage and celebrate this fact is a source of deep institutional pride. Converting learning into doing, is central to our university's concept of student success because we know that the journey grows skills and builds identity that improve outcomes both within and beyond any undergraduate degree. I therefore welcome you with enthusiasm to UMBC's 29th annual Undergraduate Research and Creative Achievement Day (URCAD).

This inspiring day showcases research and creative achievements co-created between students, staff, and faculty across UMBC and across the academic disciplines. Today you are warmly invited to experience films, musical performances, art exhibits, video games, along with presentations about experiments and analyses in every discipline. Together we celebrate this hard work showing gratitude for the mentorship and encouragement that have inspired each student to develop their potential. We celebrate the power of applied learning to develop critical thinking skills, communication skills, and skills of working in partnerships and teams. From another and equally important perspective, we celebrate the power of applied learning to produce stories and experiences that connect people across cultures, disciplines, and ideologies. These are the skills our students will take forward as leaders of the future.

Our students' achievements today are a tribute to their imaginations, their hard work, and their resilience in the face of challenges. They are also testament to the skill, passion, and service of mentors drawn from our faculty and staff across the campus. Please accept my appreciation and admiration for you all.

Welcome to URCAD 2025!

Stephen Freeland

Stephen Freeland, Ph.D.
Interim Vice Provost and Dean of Undergraduate Academic Affairs



READ THE PRESENTERS' ABSTRACTS AT
URCAD.UMBC.EDU