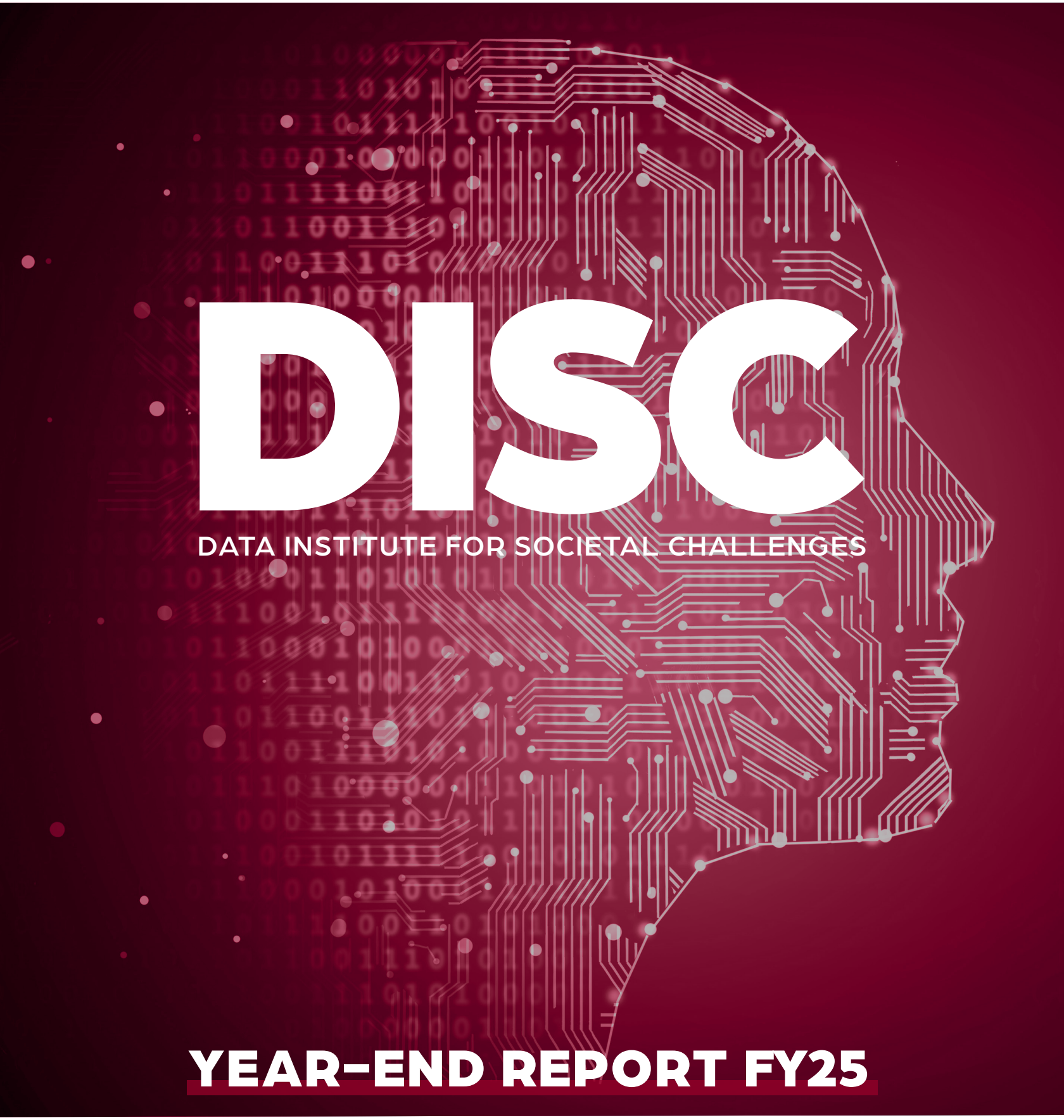
The UNIVERSITY of OKLAHOMA

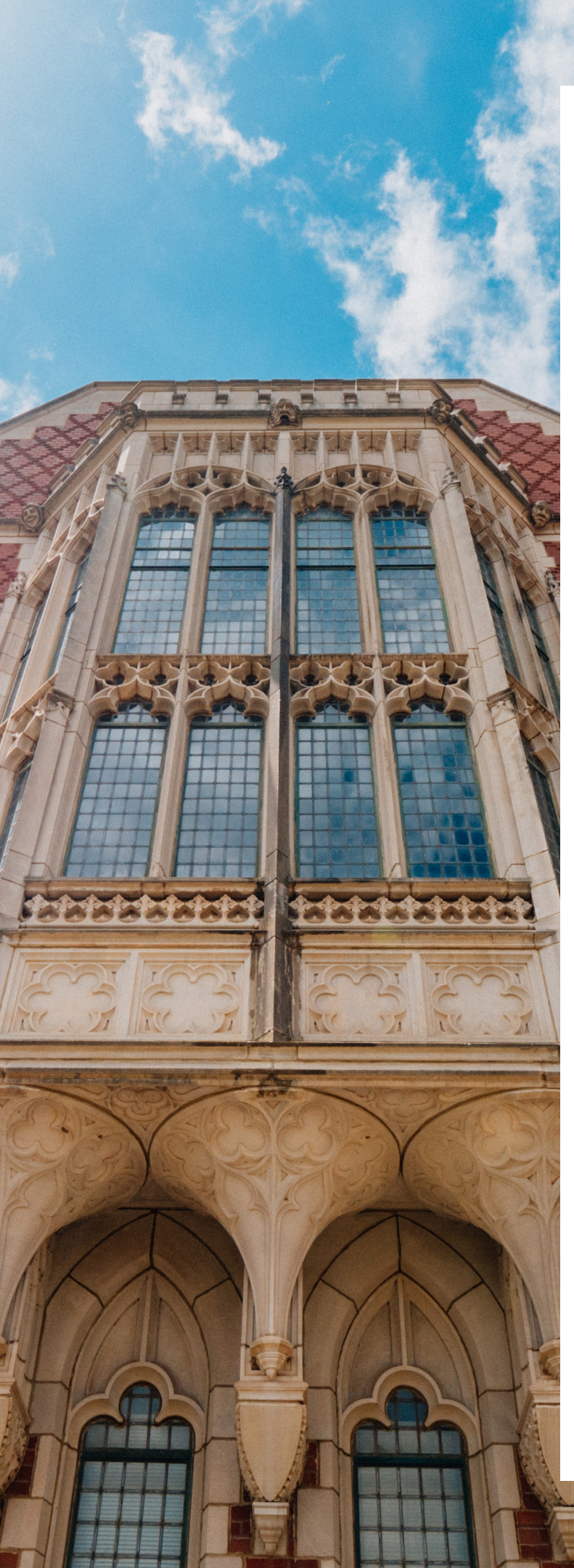


DISC

DATA INSTITUTE FOR SOCIETAL CHALLENGES

YEAR-END REPORT FY25

Five Partners Place | 201 Stephenson Pkwy, Ste 4600 | Norman, OK, 73019
Phone: 405-325-4158 | Email: disc@ou.edu | Facebook: DISCatOU | LinkedIn: Data Institute for Societal Challenges



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MESSAGE FROM THE DIRECTOR

As we close out Fiscal Year 2025, I am extraordinarily proud of what the Data Institute for Societal Challenges (DISC) and our broader data science community have accomplished together. Over the past five years, DISC has grown from a promising idea into a vibrant hub of innovation, collaboration, and impact—today encompassing over 462 affiliates and 462 dedicated members across the University of Oklahoma and beyond. Our mission to empower transdisciplinary research through data science has never been more critical than it is in this moment.

This year alone, our seed-funding program distributed $187,730 to 24 exceptional teams, catalyzing research that bridges disciplines and brings meaningful solutions to pressing societal challenges. From pioneering AI–driven composite material designs to leveraging biosensor data for advanced museum experiences, our awardees exemplify the transformative power of data science when paired with creative vision. In total, DISC has seeded 114 teams with $990,795 since 2020, and those investments are already bearing fruit in the form of student support, extramural grants, publications, and real-world outcomes that improve lives.

Our research advancement efforts reached new heights this year, with faculty and students submitting $143.47 million in proposals and securing $10.9 million in external funding. These figures speak not only to our rigorous scientific standards but also to the strength of our partnerships—both within OU and with esteemed institutions such as KAIST and Sejong University, Together, we are breaking down silos: convening engineers, social scientists, public health experts, and industry leaders to tackle challenges ranging from methane emissions to misinformation on social media.

I believe our greatest strength lies in community. DISC's twelve Communities of Practice continue to foster connections across Bioinformatics, Neuroscience, Digital Humanities, and more—enabling researchers to share ideas, swap best practices, and build teams that transcend traditional boundaries. In FY 25, our events and workshops brought hundreds of participants together, forging networks that spark new grant proposals and cross-disciplinary discoveries. It is this spirit of collegiality, this willingness to ask "What if we worked together?" that fuels our progress.

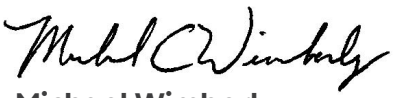
Of course, none of this would be possible without the tireless efforts of every student, postdoc, staff member, and faculty affiliate at DISC. Your creativity, curiosity, and drive to seek data-enabled solutions form the backbone of everything we do.

Looking ahead to FY 2026, we stand at the threshold of even greater opportunity. In the coming year, DISC will expand our seed program, explore new funding mechanisms, and deepen our engagement with industry partners to accelerate the translation of research into practice. We will continue to invest in strategic pillars—advancing innovation in Artificial Intelligence (AI) and Machine Learning (ML) broadening external partnerships, and strengthening community and education efforts. Our vision is clear: to solidify the University of Oklahoma's national leadership in data science, while always remaining grounded in the needs of our local communities and the global challenges we share.

To every member of the DISC family, thank you for making this journey possible. Your passion for discovery, your commitment to collaboration, and your unwavering belief in the power of data to drive positive change are what make DISC more than an institute—it makes us a movement. Together, we will continue to push boundaries, inspire new ideas, and deliver solutions.

With deep appreciation and excitement for the road ahead,

Sincerely,



Michael Wimberly
DISC Interim Director

ABOUT DISC:

Driving Data-Enabled Solutions for Societal Challenges

The Data Institute for Societal Challenges (DISC) at the University of Oklahoma stands at the forefront of leveraging data science to address pressing issues facing our society. As an interdisciplinary hub, DISC brings together diverse expertise, cutting-edge technology, and innovative thinking to tackle complex problems that impact Oklahoma, the nation, and the world.

Mission

Empower transdisciplinary research and collaboration to drive convergent solutions to societal challenges in Oklahoma, the nation, and the world through data science research, tools, and capabilities.

Values

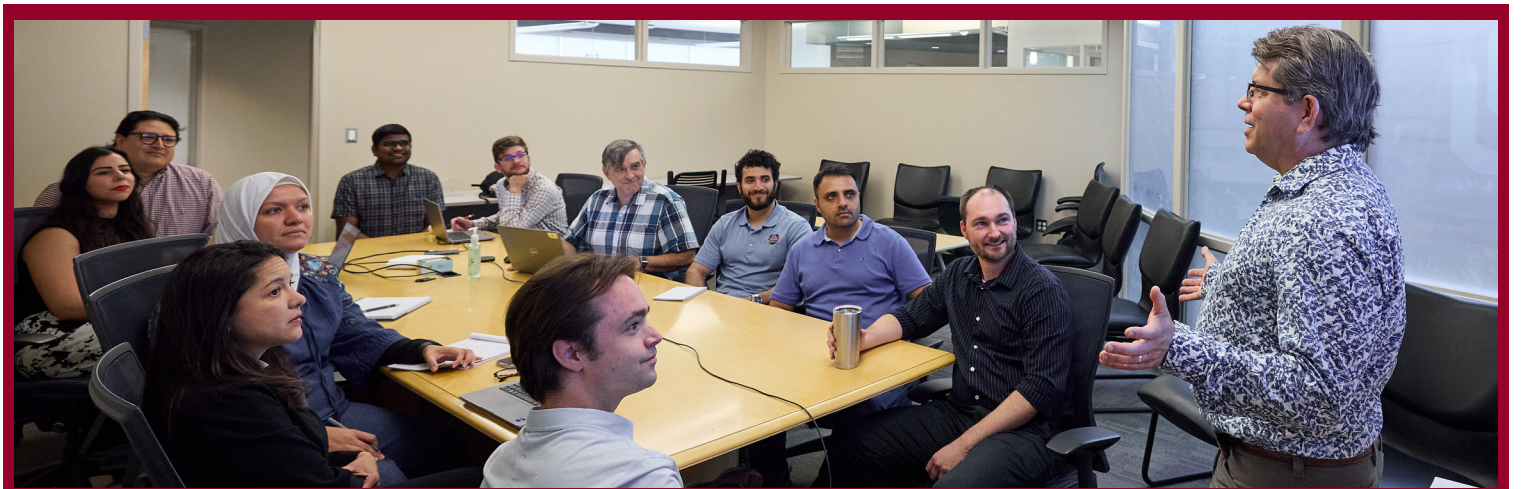
- **Collaboration**
- **Innovation**
- **Inclusivity**
- **Trust**
- **Empowerment**

Vision

The University of Oklahoma is a nationally recognized leader for data science research and data-driven solutions to societal challenges.

Strategic Goals

1. Become a leader in convergent AI and Data Science initiatives
2. Create a thriving data science, AI, and data/AI-enabled community at OU, fostering increased research and creative activities
3. Increase financial resources for long-term sustainability
4. Strengthen partnerships with industry, academia, community, and government
5. Cultivate the next generation of workforce and researchers through strategic initiatives



ORGANIZATIONAL STRUCTURE

Interim Director
Michael Wimberly

Sr. Assoc. Director
Erin Maher

Faculty Fellows
Andres D. Gonzalez
Carrie Schroeder
Binbin Weng

Research Scientists
Gopichandh "Gopi" Danala
Wolfgang Jentner
Sai Maryada
(ART Program)

Software Developers
Mahmoud Mousa Hamad
Nicholas Owen
(SCRM Initiatives)

Sr. Managing Director
Yessenia Torres

Assoc. Director
Chongle Pan

Program Managers
Erika Amaya
(ART Program)
Chris Wheeler
(SCRM Initiatives)

Administrative Support Team
Jennifer Panicci
Luke Pemberton

DATA SCIENCE COMMUNITY

Designed to help researchers, students, and staff connect across disciplines and facilitate team-building and partnerships at OU.

In FY25 we had:

462
MEMBERS

626
AFFILIATES

GRAs

Aseel Basheer
Parisa Khiabani Masnadi
Marc Hanna
Jalal Saidi
Richa Bhattarai
Amirhossein Arezoumand

UGRAs

Usman Syed
Vincent Tran
Matthew Tran
Baseer Khan

UG Mentored Research Experience

Rebecca J. Hilmes

HERE

Van The Lang
Hunter Mena
Trinity Tran

FYRE

Shawn Agarwal
Luke D. Finnegan
Sanchith Velmurugan

DSAI

Rami Reddy Yekkanti
Deepthi Yekkanti
Athirath Bommerla
Kushaal Reddy Vadde
Syed Ishmam Alawee
Mitchell D. Jones
Ean D. Rohrbach
Michael M. Quaynor
Pedro Lucero
Mounica Pragyna

RESEARCH ADVANCEMENT EFFORTS

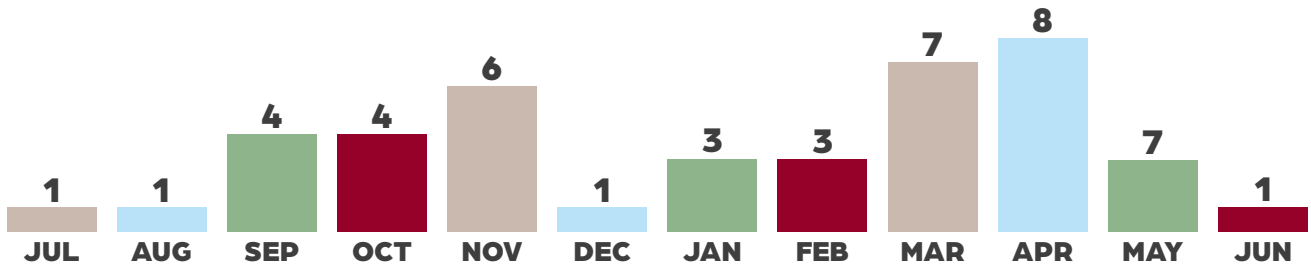
DISC has made significant strides in advancing data-driven research that tackles pressing societal challenges. Central to our mission is serving as both a connector and a collaborator across the research ecosystem at OU. We actively foster interdisciplinary collaborations by organizing innovative events, workshops, and seed funding opportunities that unite researchers from diverse fields.

Beyond convening, DISC plays an integral role as a research partner—co-developing proposals, contributing methodological expertise, and providing infrastructure support to enhance competitiveness for external funding. Our involvement has directly supported and elevated multiple successful grant submissions, demonstrating our value not just as a hub for connection, but as a catalyst for impactful, data-enabled research.

Number of Events/Hosted Per Month

42 Total Workshops/ Events Co-Hosted

1,301 Cumulative Workshop Attendance



FY24 Workshops/Events Co-Hosted

DISC Partnerships in External Funding Proposal Submissions

DISC plays an integral role in supporting the OU community in externally funded research.

$143.47M
SUBMITTED PROPOSALS

$10.90M
FUNDED PROPOSALS

DISC SEED FUNDING:

Sparking Innovation and Advancing Research

Since its launch in 2020, the DISC Seed Funding program has strategically invested $990,795 across 114 research teams, providing critical early-stage support to advance bold, interdisciplinary ideas. Offered through three distinct tracks—for faculty, postdoctoral researchers, and graduate students—this funding empowers researchers at all levels to pursue data-driven solutions to complex societal challenges.

These investments have not only enabled high-impact research but have also served as a launchpad—positioning teams to successfully secure follow-on funding from state, federal, and private sponsors. The program reflects DISC's commitment to fostering innovation, accelerating collaborative discovery, and supporting a vibrant, inclusive research community. Appendix A provides background information of the seed funding recipients.

FY25 Seed Funding Awards Recap

24 TEAMS

56 MEMBERS

$187.7K

FY24 HIGHLIGHTS

Symposiums & Major Events

Experts Gather to Advance Methane Emissions Reduction Strategies

August 21, 2024

DISC hosted a symposium titled "Closing the Gap: Strategies for Effective Methane Emissions Reduction," bringing together leading experts to address methane emissions and climate change.

- Featured presentations on methane detection and monitoring
- Engaged experts from academia, government, and industry.

Innovating for Impact: DISC Inaugural Data Science Symposium

August 21, 2024

Over 150 participants gathered at the Sam Noble Museum for a day of collaboration and insight. Highlights included:

- 33 poster presentations and interactive breakout sessions.
- Keynotes from Dr. David Ebert and Dr. Polo Chau.
- Panel discussions on AI in healthcare, radar systems, and public policy.
- Awards ceremony and strategic discussions on data science education in Oklahoma.

Partnerships & Collaborations

Memorandum of Understanding with Korea Advanced Institute of Science and Technology (KAIST)

DISC and KAIST formalized a long-term collaboration to:

- Facilitate joint research on societal challenges and data science.
- Develop graduate courses focused on data-enabled strategies and policy interventions.
- Promote exchange of faculty and students between OU and KAIST.

Speaker Series

Transforming Pandemic Prevention: DISC "Surveillance Revolution" Speaker Series

Supported by NSF PIPP grant, this series explored innovative pandemic prevention strategies, including:

- AI-driven disease modeling and wastewater surveillance.
- Addressing antimicrobial resistance and zoonotic pathogens like H5N1.
- Emphasis on predictive analytics and cross-sector collaboration for pandemic preparedness.

Prepaire: AI-Powered Biosurveillance Program

Entanglement, Inc., in collaboration with OU, announced the release of Prepaire, a cutting-edge biosurveillance platform developed under the leadership of Dr. David S. Ebert, former Interim Chief AI Officer; Associate Vice President of Research and Partnerships; and Director, Data Institute for Societal Challenges (DISC).

- Uses advanced AI for early detection of biological threats.
- Provides real-time insights enhancing global health preparedness.
- Presented at eMerge Americas Conference by OU and Entanglement leadership.

DISC TEAM MAJOR HIGHLIGHTS

Faculty & Staff Recognition & Community Impact

- **Dr. Erin Maher:** Hosted state summit on justice reform; honored with the Women's Gender Studies (WGS) Social Justice Award.
- **Dr. Yessenia Torres:** Received the VPRP Award for Research Excellence and Staff Senate's Distinguished Performance Award; Elected to serve as a Staff Senate Senator beginning August 2025.

Coptic NLP & Digital Expansion

Dr. Carrie Schroeder's NEH-funded project added 750K+ annotated words to the open-access Coptic database, launched the first NLP tools for two ancient Egyptian dialects, and published OCR models—all available at copticscriptorium.org.

Combating Misinformation with SMART 2.0

DISC software developer **Mahmoud Mousa Hamad** published his first paper on SMART 2.0, an AI-powered platform for real-time misinformation tracking, developed in collaboration with DISC team members. The tool has become a critical resource for government and global information analysis.

AI for Health, Ag, and the Arts

Dr. Gopichandh Danala led major AI collaborations:

- **USDA**: Launched 4 new ag-tech projects and co-hosted OU's AGRI:AI student competition.
- **UT Southwestern**: Co-developed RADIS-aSAH for brain injury prediction, submitting NIH R01 grant.
- **OU Health Sciences**: Advanced pediatric cardiology research using AI.
- **Voice Analytics**: Supported a DMA dissertation analyzing Xhosa vocal compositions through data science.

Building Secure Research Capacity

The SCRM team, led by Dr. Charles Nicholson, built a secure, export-controlled environment for advanced research, submitted $ 1.3 M+ in deliverables, and became one of the first groups outside ARRC to handle Category D1 (CUI/ITAR) research.

NSF ART: InTRO Cohort 26 Launched

New TRPs and Fellows were selected to strengthen OU's research translation ecosystem. Led by expert faculty, the program builds interdisciplinary networks supporting translational research.

TRPs Selected for Cohort 26

- **TRP-5**: John Clegg
- **TRP-7**: David Miller
- **TRP-9**: Steven Crossley
- **TRP-11**: Wei Qin
- **TRP-36**: Brian Grady
- **TRP-37**: Mrinal Saha

Fellows Selected for Cohort 26

- **F-1**: Shreya Vemuganti
- **F-5**: Seyed Mostafa Tabatabaei
- **F-6**: Paul Calle Contreras
- **F-7**: Sooraj Patel
- **F-10**: Sarah Heiniger

INNOVATIVE STUDENT RESEARCH AND IMPACTFUL PROJECTS

DISC students made significant strides this year, tackling real-world challenges through interdisciplinary research and data science applications. Below are some highlights showcasing their innovation, technical skills, and contributions to scientific advancement:

- **Aseel Bashheer** presented at the prestigious HICSS conference, sharing a paper on pandemic surveillance. She also published a review at IEEE VIS, contributed to a One Health journal submission, and presented at multiple research symposiums. Aseel completed OU's Cybersecurity Essentials training, further strengthening her expertise.
- **Parisa Masnadi Khiabani**, a Ph.D. candidate, contributed to a DOE-funded study on methane monitoring and presented at IEEE VIS. Her award-winning GIS Day poster and ongoing work on methane quantification demonstrate her leadership in environmental data science.
- **Jalal Saidi** advanced three research projects, including DoD-funded work on resilient networks, deep learning forecasting for COVID-19, and geo-inference using Twitter data. His findings will be submitted to ICMLA 2025.
- **Amirhossein Arezoumand** focused on intelligent healthcare systems, presenting stroke prediction research at SPIE Medical Imaging 2025. He is preparing new work on pediatric arrhythmia detection and mentoring undergraduate students.
- **Sanchith Velmurugan**, a freshman FYRE student, received a UReCA Fellowship and contributed to stroke segmentation research. His efforts led to a funded proposal and active participation in Undergraduate Research Day.
- **Michael M. Quaynor and Syed Ishmam Alawee** developed and evaluated deep learning models for brain segmentation. Their work enhanced model performance and reproducibility in medical imaging research.
- **Vignesh Murugan** led a project predicting cognitive decline in stroke patients using ML. He built a flexible ML pipeline, applied advanced evaluation techniques, and prototyped a Streamlit app for clinical use.
- **Hunter Mena and Trinity Tran**, undergraduates in Computer Science, collaborated on pediatric ECG classification. They built preprocessing pipelines, implemented ML models, and explored ethical implications of AI in healthcare.
- **Luke Finnegan**, a first-year FYRE participant, supported stroke segmentation research. He contributed to reports and presentations, deepened his ML knowledge, and built skills in research writing and visualization.
- **Mitchell Jones and Ean Rohrbach** worked on relevance classification for the SMART tool. Using active learning and sentiment analysis, they built a system achieving 91% F1-score while reducing labeling effort.
- **Van Lang**, an undergraduate in Computer Engineering, trained a 3D U-Net model for brain segmentation and optimized his pipeline on OU's supercomputing cluster. His work was featured at Undergraduate Research Day.

These student-led efforts reflect DISC's commitment to experiential learning and impactful research across data science, public health, AI, and environmental monitoring.

AI INITIATIVE AT OU

The University of Oklahoma (OU) is advancing a comprehensive, university-wide strategy to lead in artificial intelligence (AI) innovation, research, education, and implementation. DISC has provided leadership to implement the first phase of this initiative. This included hosting leadership meetings and university-wide town halls with a total attendance of 409 participants across all three OU campuses.

Five interdisciplinary AI working groups were established to focus on key thematic areas and develop a unified roadmap that aligns emerging AI capabilities with OU's mission, strategic vision, and societal responsibilities:

1. **AI Research**
2. **AI Healthcare Implementation**
3. **AI Education: Training and Teaching**
4. **AI Infrastructure and Resources**
5. **AI Governance and Policy**

These working groups hold regular meetings to drive progress, share insights, and coordinate efforts across units. In addition, a series of Lunch & Learn sessions were conducted to further engage the university community, promote dialogue, and broaden awareness of AI initiatives.

This strategic initiative addresses the rapid and transformative impact of AI across all sectors of society. From enhancing clinical care and streamlining university operations to reimagining curriculum and accelerating research, the roadmap reflects OU's proactive, ethical, and inclusive approach to AI adoption. It positions the university not merely as a participant in the AI era, but as a thought leader shaping how higher education responsibly embraces these technologies.

More than 100 faculty, clinicians, researchers, students, and staff from the Norman, Health Sciences, and Tulsa campuses are contributing to this effort, representing one of the most collaborative and cross-disciplinary planning processes in recent institutional history. Their work has identified critical short-term actions and long-term strategic priorities that collectively build a strong foundation for sustainable impact.

Additional efforts include launching an AI Webinar Series to promote ongoing learning (see Appendix B), designing the University's AI website for better access to resources, and supporting the OU AI Pilot Seed Funding initiative (see Appendix C). The AI Pilot Competition received 51 submissions, awarding $182,443 to 20 interdisciplinary teams across 29 departments. This funding supports the inaugural OU Summer AI Pilot Projects, fostering innovative AI-driven research, teaching, policy, governance, and community engagement.

OU AI WORKING GROUPS

AI Health Implementation

Leads

- David Bard – Pediatrics
- Jun Li – Molecular Genetics and Genome Sciences

Core Members

- Chongle Pan – Computer Science
- Gopichandh Danala – DISC
- Dee Wu – Radiological Science – Medical Physics

Advisory Members

- Naveen Kumar – Management Information Systems
- Anthony Alleman – Radiology
- Stacey Tovino – College of Law
- Ryan Nipp - Hematology-Oncology
- Mark Woodring – Health Administration & Policy
- Muhammad Al-Sajid Riaz – Software Development and Integration
- Elizabeth Hile - Rehabilitation Science
- Mia Kile – Interior Design
- Sonnice Estill - Interdisciplinary Studies, Health Care Administration
- Doris Benbrook - Gynecologic Oncology
- Hoda Soltani – Data Science
- Jay Anderson - Family and Community Medicine
- Faizah Bhatti – Pediatrics
- Greg Macdonald - OU Polytechnic, Applied Artificial Intelligence
- Ahmed Butt - OU Polytechnic, Applied Artificial Intelligence
- Chenggang Wang – OU Polytechnic, Cybersecurity
- Sharukh Khajotia – Dentistry
- Mike Anderson - Biostatistics & Epidemiology

AI Governance & Policy

Leads

- Erin Maher - Sociology
- April Dickson – OUIT Governance, Risk, and Compliance

Core Members

- Chris Jones – IT Administration
- Kenton Brice – Law Center Library
- Aaron Biggs – Office of the Senior VP and Provost
- Tammy McCuen – Construction Science
- Michael Szajewski – Academic Affairs
- Gopi Danala – DISC

Advisory Members

- Naveen Kumar – Management Information Systems
- Tracy Pearl – College of Law
- Adam Green – Philosophy
- Jacob Pleasants - Instructional Leadership and Academic Curriculum

- Raina Heaton – Native American Studies
- Jeremy Hessman – IT Engineering Lab
- Sharukh Kajotia – Dentistry
- Jane Bredeau – Internal Audit Department
- Hayden Vedra – Undergraduate Teaching Assistant
- Dee Wu - Radiological Science – Medical Physics
- Marayam Fathollahi – Finance – Price College of Business

AI Research

Leads

- Andy Fagg – Computer Science
- Michael Wimberly – Geography & Environmental Sustainability, DISC

Core Members

- Amy McGovern – Computer Science
- Chongle Pan – Computer Science
- Claudette Grinell-Davis – Social Work (Tulsa)
- Hunter Heyck – History of Science
- Sam Huskey – Classics & Letters
- Sharukh Khajotia – Dentistry

Advisory Members

- James Hung - OK Biological Survey
- Xiangming Xiao – Center for Earth Observation and Modeling
- Charles Nicholson – Data Science and Analytics Institute
- Karina Shreffler – Nursing Academic Programs
- Chad Roller – OU Polytechnic, Software Development and Integration
- Jason Furtado – Meteorology
- Jie Cao – Computer Science
- Jessica Davila – Libraries
- Greg McFarquhar – Meteorology
- Xiaodong Chen – Civil Engineering & Environmental Science
- Aaron Hill – Meteorology
- Xin (Selena) Feng – Geography & Environmental Sustainability
- Chengbin Deng - Geography & Environmental Sustainability
- Carrie Schroeder – Women's & Gender Studies
- Mike Banad - Electrical and Computer Engineering
- Samuel Cheng - Electrical and Computer Engineering
- Ashley Davis – Management & Information Systems, Accounting
- Tiantian Yang - Civil Engineering and Environmental Science
- Hoda Soltani – OUIT – Data Scientist
- Jun Li - Genetics & Genome Sciences
- Ladan Mozaffarian – Planning, Landscape Architecture & Design (PLAD)
- Ganisher Davlyatov – College of Public Health
- Kofi Asare – Construction Science
- Aimee Franklin - Southern Climate Impacts Planning Program
- Jiqun Liu - Library and Information Studies
- Shane Connelly – ICAST
- Xuguang Wang – Consortium for Advanced Data Assimilation Research and Education (CADRE)

AI Resources & Infrastructure

Leads

- Wolfgang Jentner – DISC
- Chongle Pan – Computer Science

Core Members

- Richard Veras – Computer Science
- Sam Billerbeck – Computer Science
- Henry Neeman – Research Computing, OSCER
- Chris Jones – IT Administration
- Andy Fagg – Computer Science
- Matt Beattie – Applied Artificial Intelligence
- Glenn Hansen – OU IT

Advisory Members

- Sam Huskey – Classics & Letters
- John Hasell – OU Polytechnic, Software Development and Integration
- Amanda Kis – Meteorology
- Daniel Zhao – Biostatistics & Epidemiology
- Dakota Martinez – Mathematics
- Tim Levine – Communication Studies
- Tyler Pearson – Library and Information Systems

AI Education

Leads

- Geneva Murray – Center for Faculty Excellence
- Jessica Davila – Library and Information Systems, Digital Strategies & Innovation

Core Members

- John Hasell – OU Polytechnic, Software Development and Integration
- Andy Fagg – Computer Science
- Chris Jones – IT Administration
- Gopi Danala – DISC
- Wolfgang Jentner – DISC
- Naveen Kumar – Management Information Systems
- Geoff Koch – Marketing and Supply Chain Management
- Sean Harrington – Law Center Library
- Dollaya Hirunysiri – Instructional Designer
- Ashton Foley-Schramm – OU Writing Center

Advisory Members

- Melissa Wilson Reyes – AI2ES
- June Bood – Marketing & Supply Chain Management
- Mary Beth Humphrey – Rheumatology/Immunology
- Amanda Kis – Meteorology
- Rebecca Huskey – Classics & Letters
- Lucia Colombari – Art History and Arts Management
- Darren Purcell – Geography & Environmental Sustainability
- Suchismita Bhattacharjee – Interior Design
- Laura Janneck – Emergency Medicine
- Hayden Vedra – Undergraduate Teaching Assistant

- Kevin Buck – IT Engineering Lab
- Ashley Davis - Management & Information Systems, Accounting
- Ganisher Davlyatov - Health Administration and Policy
- Pandora Hancock – Oncology
- Kofi Asare – Construction Science
- Kristin Rodriguez – OU Tulsa Simulation Center
- Anne Pate - Undergraduate Public Health, and Population and Community Health
- Brandt Wiskur - Family and Preventive Medicine
- Franklin Hays - Nutritional Sciences
- Jeremy Hessman – OUIT, Technology Strategist
- Tarren Shaw - Undergraduate biology instruction and education research
- Keiana Cross – K20 Center
- Teri Reed – OU Polytechnic, Tulsa
- Ahmed Butt – OU Polytechnic, Applied Artificial intelligence
- Blake Lesselroth – Medical Informatics
- Josephine Kim – Student Learning Center

A LOOK AHEAD: DIRECTION FOR THE FUTURE

Five years have passed, and our commitment to supporting data-driven research is stronger than ever. At DISC, we are excited about what lies ahead and look forward to continued collaboration across the OU campus and beyond.

As we look to the future, DISC remains dedicated to advancing innovative, interdisciplinary research that addresses real-world challenges. By harnessing our expertise in data science, artificial intelligence, and machine learning, we aim to drive transformative impact through research, education, and collaboration.

GRATITUDE AND ACKNOWLEDGMENTS

We extend our sincere thanks to our students, researchers, staff, campus partners, and supporters. Your dedication, creativity, and collaboration have been vital to our progress. Together, we will continue to push the boundaries of knowledge and create lasting societal impact.

APPENDIX A

DISC Seed Funding Awardees

Faculty:

Project Title	Team Members	Department(s)	Amount Awarded
Exploring Large Language Models for the Inverse Design of Materials	Shuozhi Xu, Kun Lu	Aerospace and Mechanical Engineering, Library and Information Studies	$10,000
Resilient Networks in the Electric Vehicle Battery Supply Chain: Market Structures and Policy Impacts	Myongjin Kim, Georgia Kosmopoulou	Economics	$10,000
Explainable AI for Predictive Analytics in Nursing Practice	Yasser Youssef	Library and Information Studies	$10,000
Pilot Fieldwork in Linguistic Geography in Paraguay	Raina Heaton, Anthony Cummings	Native American Studies	$9,300
Data-Driven 2D Materials Discovery for Green Hydrogen Production	Kasun Gunasooriya	School of Sustainable Chemical, Biological and Materials Engineering	$10,000
InvisIoT: Preserving Smart Home Privacy Through Adaptive IoT Profiling and Internet Traffic Obfuscation	Qi Li	School of Electrical and Computer Engineering	$12,500
Experimental Planning and Optimization of Nanotube Synthesis via Data-driven Machine Learning	Jingyao Dai, Yijie Jiang	Aerospace and Mechanical Engineering	$12,500
The Digital Frontier: Fort Gibson as a Model for Virtual Heritage in Oklahoma	Brandi Bethke, Amanda Regnier, Joey Williams, Kristi Wyatt	Oklahoma Archeological Survey	$10,500
Examining Complex Contagion in Algorithmic Alcohol Marketing on Social Media: A Mixed-Method Approach	JK Lee, Yu Lu, Doyle Yoon, Kyung Han You, Hyunjin Kang	Department of Health and Exercise Science, Gaylord College of Journalism and Mass Communication	$9,857
Predicting Long-Term Health Outcomes of Early Metformin Use Using Deep Learning Models and Stochastic Optimization for Personalized Dosage in Type 2 Diabetes Management	Charles Nicholson	Industrial and Systems Engineering	$10,500

Project Title	Team Members	Department(s)	Amount Awarded
Mapping Academic Genealogy for Interdisciplinary History of Science Research	Stephen Weldon, Manika Lamba, Chris	History of Science, Technology, and Medicine, School of Library and Information Studies, Computer Science	$11,500
Data-enabled Self-Supervised Algorithm for Enhanced 3D Medical Image Segmentation	Ying Wang	Department of Mathematics	$9,500
Public Clearinghouse on Oklahoma Missing Persons Cases	Melanie Fillmore, Mansoor Abdulhak	Native American Studies, Computer Science	$10,500
Integrated Off-Road Long-Range Navigation, Local Path Planning and Following via the Fully Automated Cooperation of Vehicle Embedded Autonomous Drones and Ground Vehicles	Bin Xu, Wei Sun, Golnaz Habibi	Aerospace and Mechanical Engineering, Computer Science	$12,000

Total of Faculty Awards: $150,300.00

Postdoc:

Project Title	Team Members	Department(s)	Amount Awarded
Mass spectrometry-based metabolomics to understand multidrug efflux and permeation in antibiotic resistance in Pseudomonas aerginosa	Thilini Peramuna	Department of Chemistry and Biochemistry	$5,000
State-of-the-Art Simulations for Circumbinary Exoplanet Formation	Jeremy Smallwood	Department of Astrophysics	$5,000
A Deep Learning-Based Imaging Platform for Kidney Biopsy	Chen Wang, Qinggong Tang, Chongle Pan, Sean Duguay, William Vanlandingham, Kar-Ming Fung	Biomedical Engineering, Radiological Sciences, Pathology	$5,000
Data-Driven Prediction of Kidney Transplant Outcomes Using OCT Imaging	Ke Zhang, Qinggong Tang, Chongle Pan, Narendra Battula, Palo Martins	Biomedical Engineering	$5,000
Numerical Simulation Investigating the Transition Process Between Earthquake Swarm and Mainshock Sequence	SeongJu Jeong	School of Geosciences	$4,930

Postdoc Total: $24,930.00

Graduate Student:

Project Title	Team Members	Department(s)	Amount Awarded
FDA Orange Book Patent Listings as a Method of Entry Deterrence	Lilly Kirby-Rivera, Georgia Kosmopoulou, Myongjin Kim	Department of Economics	$2,500
Trauma to Hope: Designing Refugee Children's Dream Housing Through a Trauma-Informed Lens Using Minecraft – A Creative Design Tool	Salma Akter	Department of Planning, Design and Construction	$2,500
Data-Driven Conservation: Integrating Digital Humanities and Genomics to Preserve the Choctaw Hog	Horvey Palacios, Brittany Bingham, Isabella Cowan	Department of Anthropology	$2,500
Impact of 3D Printing Construction on Affordable Housing, Indoor Microclimate, and User Comfort	Keerthana Nampally	Interior Design	$2,500
Multiparametric Texture Analysis of OCT Imaging for Therapeutic Response Evaluation in Ovarian Cancer Mouse Models	Qinghao Zhang, Qinggong Tang, Lauren Dockery, Chongle Pan	Biomedical Engineering	$2,500

Graduate Student Total: $12,500.00

APPENDIX B

OU AI Webinar Series

As part of the AI Initiative, a series of webinars were created to foster knowledge-sharing, spark interdisciplinary conversations, and highlight the innovative ways AI is being explored and applied across all our campuses.

Session	Speakers	Date	Time	Attendees
AI Webinar Series: Session I	John Hassell – The Two Faces of AI: Prediction, Generation, and the Myths Between	4/21/2025	12:00 – 1:00	23
	Lindsey Mastin and Sheniqia Haynes – AI and Student Career Development			
	Marcos Stocco – Industry Perspective: Impacts of AI Incorporation in S/W Development Team Dynamics			
AI Webinar Series: Session 2	V. Nicholas LoLordo – The Future of Gen Ed Reading & Writing in the Age of Generative AI	4/30/2025	10:00 – 11:00	30
	Eric Day – Thriving with AI in the Workplace			
	Kofi Asarei – AI in Construction Science			
AI Webinar Series: Session 3	Samuel J. Huskey – Sustaining and Accelerating Digital Humanities Research with AI When Funding is Scarce.	5/5/2025	3:00 – 4:00	25
	Ziyang Xu – Disciplinary Diversity in Academic AI Adoption: A Comparative Analysis of AI Tool Usage Declarations Across Scientific Fields.			
	Glen McGowan, Google Industry CX – Google: AI trends in Large Network and Cloud Service Provider Industries.			
AI Webinar Series: Session 4	Farrokh Mistree – Generative AI for Designing Policy and Business Strategy for Sustainable Development	5/16/2025	12:00 – 1:00	28
	Manika Lamba – Coconut Libtool: AI-Driven Document Analysis			
	Anany Gupta – Multiagent Reinforcement Learning for Peer-to-Peer Energy Trading			
AI Webinar Series: Session 5	Stacey Tovino – AI and the HIPAA Privacy Rule	5/27/2025	12:00 – 1:00	20
	Selena Feng – RegionDefiner: Democratizing Regionalization Algorithms Through Large Language Models			

APPENDIX C

OU AI Pilot Seed Funding

The university successfully launched the AI Pilot Competition, which received an enthusiastic response with 51 submissions from across all campuses. From these, 20 interdisciplinary teams representing 29 departments were awarded a total of $182,443 in seed funding. These selected projects span a diverse array of academic disciplines and operational domains. This internal investment supports the inaugural OU Summer AI Pilot Projects initiative, designed to catalyze innovative, AI-driven efforts in research, teaching, policy development, governance, and community engagement.

Principal Investigator	Department	Title of Project	Amount Requested
Resources & Infrastructure – 4 Proposals			
Tyler Pearson Varun Sayapaneni Mark Laufersweiler	University Libraries	AI Pilot of Tools and Workshop Curriculum for Research and Instruction	$10,000.00
Chongle Pan	Computer Science	Benchmarking the Scalability, Turnaround time, and Cost of On-premise and Cloud Computing Platforms for Fine-tuning LLMs.	$10,000.00
Xiaolan Liao David Bard	Pediatrics Pediatrics	Smart Data Prep: an AI- Assisted Tool for Streamlined Data Preprocessing and Integration for Non-Programmer Researchers	$10,000.00
Sungbo Jung Chenggang Wang	Cybersecurity, OU Polytechnic Institute	Establishing a High-Performance Local AI Development Platform: Empowering the University of Oklahoma with Secure and Efficient On-Premises LLM Capabilities	$10,000.00
$35,000.00			
Health – 4 Proposals			
Sharukh Khajotia	College of Dentistry, Department of Dental Materials	Detecting and Locating Second Mesio-Buccal Canals in Maxillary Molars using AI	$9,942.00
Farah Masood	Dentistry, Dept of Diagnostic and Preventative Sciences		
David. Shadid	Dentistry, Division of Endodontics		
Chongle Pan	Computer Science		
Jinyoung Park	Research / Professional Dentistry		

Principal Investigator	Department	Title of Project	Amount Requested
David Bard	Pediatrics	A Comparative Pilot of Manual vs. LLM-Augmented Abstraction for Clinical Imaging Reports	$10,000.00
Faizeh Bhatti	Neonatal-Prenatal Medicine		
Will Beasley	Psychology		
Arnold Kanagwa	Clinical Research Data Warehouse		
Ashley Thumann	Clinical Research Data Warehouse		
Geneva Daniel	Clinical Research Data Warehouse		
Dokyoung Sophia You	Family and Community Medicine	Feasibility of an AI-Powered Learning Healthcare System for Behavioral Medicine Services	$4,200.00
Jay Anderson	Family and Community Medicine		
Bingi Arnold Kanagwa	Clinical Research Data Warehouse	Predicting 30-Day Unplanned Hospital Readmissions Using Machine Learning: From Model Development to Deployment	$10,000.00
		$34,142.00	
Education – 7 Proposals			
Sean Harrington	Technology and Innovation – College of Law	AI-First Legal Education: Course Development, Secure Assessment, and Canvas Assistant	$10,000.00
Kenton Brice	Law Library		
Jacob Pleasants	Instructional Leadership and Academic Curriculum	Instructional Resources to Promote OU Students' Critical AI Literacy	$9,198.00
Julianna Kershen	Instructional Leadership and Academic Curriculum		
Yong Ju Jung	Libraries and Information Studies	Syllabi and Activities for AI-Assisted Maker Education: Design and Evaluation	$9,964.00
Jiqun Liu	Libraries and Information Studies		
Arif Sadri	Civil Engineering and Environmental Science	Enhancing Traffic Engineering Education with AI: Integrating Advanced Techniques for Traffic Analysis, Design, and Control	$10,000.00
Randall Kolar			
Royce Floyd			
Javeed Kittur	Engineering Education	AI-Enhanced Teaching: A Bloom's Taxonomy-Based Faculty Development Initiative	$10,000.00

Principal Investigator	Department	Title of Project	Amount Requested
Dee Wu	Radiological Sciences	Developing a model structured curriculum for the use of AI in training differential diagnosis	$10,000.00
Nirmal Choradia	Thoracic Oncology		
Eric Day	Psychology		
Amy Bradshaw	Educational Psychology		
Mohammad Shams Ud Duha	Educational Psychology		
Shane Connelly	CASR		
Anthony Alleman	Radiological Sciences	Timely Responsible AI Think Tank (TRAITT) Curriculum Development and Evaluation	$10,000.00
Dee Wu	Radiological Sciences		
Mohammad Duha	Educational Psychology		
Brian Fails	Radiological Sciences		
Brandt Wiskur	Family and Preventative Medicine		
Chris Williams	Clinical Pathology		
Jose Sanclement	Otolaryngology		
$69,162.00			
Research – 5 Proposals			
Sam Huskey	Classics & Letters	AI for Cost-Effective Research Workflows When Funding is Scarce	$9,974.00
Raina Heaton	Native American Studies		
Carrie Schroeder	Women's and Gender Studies		
Heshan Sun	Management Information Systems	Trustworthy AI for Research and Learning: Role-Based Multi-Agent AI Applications for Information Accuracy	$9,200.00
Anindya Maiti	Computer Science	Enhancing Email Management through Large Multi-Modal Model Classification	$7,665.00
Blaine Mooers	Biochemistry and Physiology	Extending the Impact of the Oklahoma Data Science Workshop	$10,000.00

Principal Investigator	Department	Title of Project	Amount Requested
Chenggang Wang	Cybersecurity, OU Polytechnic Institute	Catalyst OU: A Pilot for an LLM-Powered Researcher Collaboration Network	$7,300.00
Chad Roller	Software Development and Integration, OU Polytechnic Institute		
$44,139.00			
Awarded 20 Projects			$182,443.00

APPENDIX D

Publication Samples by DISC Members and Affiliates

- Cao, J., Ming, Z., Allen, J. K., & Mistree, F. (2024). A Design Method for a Self-Organizing Closed-Loop Control System Based on Stigmergy and Bi-Level Planning. In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 88377, p. V03BT03A045). American Society of Mechanical Engineers.
- Schroeder, C. T. (2024). Virtual Research Environments**.** https://books.ub.uni-heidelberg.de/heibooks/catalog/book/1521/chapter/21960 . German translation: "Virtuelle Forschungsumgebungen" *Kompendium Computational Theology* Bd. 1: Forschungspraktiken in den Digital Humanities (Heidelberg: HEIBooks, 2024), pp. 411–426. https://books.ub.uni-heidelberg.de/heibooks/catalog/book/1459/chapter/21924
- Curry, C. M., Albin, E., Schilling, A., Tweedy, B., & Wyatt, K. (2024). Plain Language Workshop Descriptions: How to Attract Participants from all Disciplines. College & Research Libraries News, 85(8), 327. https://doi.org/10.5860/crln.85.8.327
- Emre, D., Barker, K., González, A. D., Cilali, B., Radhakrishnan, S., & Noyori-Corbett, C. (2025). Optimizing climate-induced migration: A temporal multi-layer network approach. *International Journal of Disaster Risk Reduction*, *117*, 105172.
- Fagin, T. D., Vadjunec, J. M., Boardman, A. L., & Hinsdale, L. M. (2024). Use of Participatory sUAS in Resilient Socioecological Systems (SES) Research: A Review and Case Study from the Southern Great Plains, USA. Drones, 8(6), 223. https://doi.org/10.3390/drones8060223
- Ghorbani-Renani, N., González, A. D., & Barker, K. (2025). Hybrid algorithms for enhanced efficiency and scalability of network-based tri-level interdiction models. Journal of Heuristics, 31(2), 20.
- Haynes, J. P. E., Bhalerao, M. J., Honeycutt, W. T., Allen, J. K., & Mistree, F. (2024). Predictive Modeling for Public Policy Design: The Impact of Artificial Lights at Night (ALAN) on Bird Strikes. In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 88353, p. V02BT02A021). American Society of Mechanical Engineers.
- Jamalzadeh, S., Barker, K., González, A. D., Radhakrishnan, S., & Bessarabova, E. (2025). Infrastructure network protection under uncertain impacts of weaponized disinformation campaigns. *Physica A: Statistical Mechanics and its Applications*, *660*, 130365.
- Jamalzadeh, S., Barker, K., González, A. D., Radhakrishnan, S., Bessarabova, E., & Sansavini, G. (2025). Disinformation interdiction: protecting infrastructure networks from weaponized disinformation campaigns. *Journal of Complex Networks*, *13*(2), cnaf003.
- Khameneh, R. T., Barker, K., & Ramirez-Marquez, J. E. (2025). A hybrid machine learning and simulation framework for modeling and understanding disinformation-induced disruptions in public transit systems. *Reliability Engineering & System Safety*, *255*, 110656.
- Korah, A., & Wimberly, M. C. (2024). Annual impervious surface data from 2001–2020 for West African countries: Ghana, Togo, Benin, and Nigeria. Scientific Data, 11, 791. https://doi.org/10.1038/s41597-024-03610-8.
- Mandegari, S., Bhalerao, M. J., Allen, J. K., & Mistree, F. (2024). Predicting Future States of Evolving Systems. In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 88377, p. V03BT03A007). American Society of Mechanical Engineers.
- Maryada, S. K., Devegowda, D., Curtis, M., & Rai, C. (2024). Improved Data-Driven Method for the Prediction of Elastic Properties in Unconventional Shales from SEM Images. In *SPWLA Formation Evaluation Symposium of Japan* (pp. SPWLA-JFES). SPWLA.
- Ming, Z., Luo, Y., Wang, G., Yan, Y., Allen, J. K., & Mistree, F. (2024). Designing self-organizing systems using surrogate

models and the compromise decision support problem construct. *Advanced Engineering Informatics*, 59, 102350. https://doi.org/10.1016/j.aei.2023.102350. Impact Factor 8.8

- Domingo-Ferrer, J., Sánchez, D., & Muralidhar, K. Statistical disclosure control: moving forward.
- Rocco, C. M., Barker, K., Moronta, J., & González, A. D. (2024). A psychological network analysis of the relationship among component importance measures. *Applied Network Science*, *9*(1), 20.
- Rocco, C. M., Barker, K., Radhakrishnan, S., & Moronta, J. (2025). Sensitivity, criticality, and optimization in bipartite networks: application in urban transit infrastructure. *Environment Systems and Decisions*, *45*(2), 15.
- Rocco, C. M., Barker, K., Radhakrishnan, S., & Ramirez-Marquez, J. E. (2025). Multi-objective model to protect infrastructure networks from disinformation diffusion. *Social Network Analysis and Mining*, *15*(1), 28.
- Straub, A. M., Vadjunec, J. M., & Fagin, T. D. (2025). Networks of Inclusive Exclusion: Social Capital and Resilient Rural Livelihoods in the Southern Great Plains (SGP). *Human Ecology*, 1-19. https://doi.org/10.1007/s10745-025-00565-1
- Vadjunec, J. M., Fagin, T. D., Hinsdale, L. M., Carrasco Galvan, G. B., & Baum, K. A. (2024). Deeper Engagement with Material and Non-Material Aspects of Water in Land System Science: An Introduction to the Special Issue. *Land*, *13*(12), 2095.https://doi.org/10.3390/land13122095
- Zhang, Z., Radhakrishnan, S., Barker, K., & González, A. D. (2024). Maintaining the Giant Component in Networks with Edge Weighted Augmentation Given Causal Failures. *IEEE Access*.

DATA INSTITUTE FOR SOCIETAL CHALLENGES

The UNIVERSITY *of* OKLAHOMA