



DATA INSTITUTE FOR SOCIETAL CHALLENGES  
*The UNIVERSITY of OKLAHOMA*

# YEAR-END REPORT

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Data Institute for Societal Challenges  
University of Oklahoma  
Five Partners Place  
201 Stephenson Pkwy, Ste 4600  
Norman, OK. 73019  
405-325-4158  
[disc@ou.edu](mailto:disc@ou.edu)

# MESSAGE FROM THE DIRECTOR



Dear Colleagues,

We are excited that the Data Institute for Societal Challenges (DISC) has hit its two-year mark this past June! We thank each of you for your support and collaboration.

FY 2022 was a year full of accomplishments for our DISC team, members, and affiliates. The DISC community is growing with many exciting communities of practice forming and teams proposing innovative approaches to challenging, important problems. During this year, we hosted a variety of events to connect researchers within and beyond OU. Many of our members submitted proposals to various agencies. Additionally, DISC provided seed funding to researchers from across campuses. We also expanded our seed funding competitions and partnered with the Stephenson Cancer Center, the Institute for Community and Society Transformation, and Oklahoma Aerospace and Defense Innovation Institute.

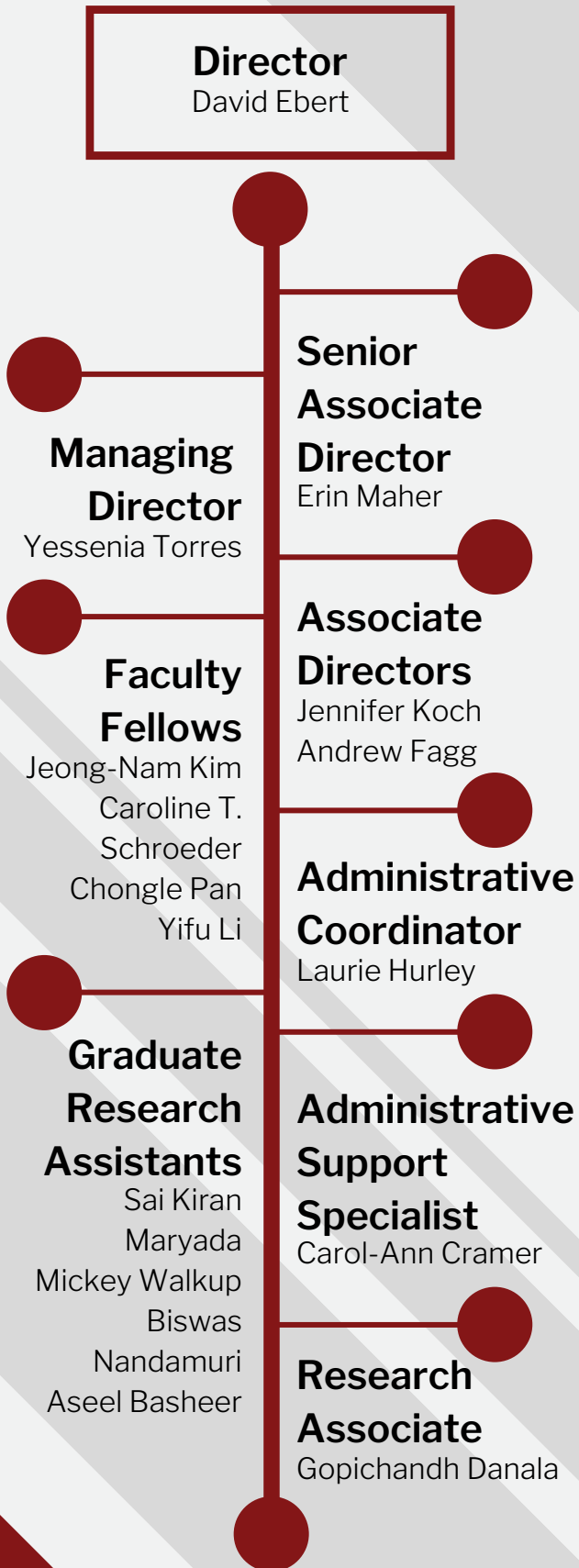
This end-of-the-year report will provide an overview of what the DISC team, members, and affiliates have accomplished in FY 2022.

We look forward to continuing to grow and support our community with a year full of accomplishments and collaborations in FY 23.

Sincerely,  
Dr. David Ebert, Director



# DISC ORGANIZATIONAL STRUCTURE



## Highlights from our Team

Our DISC team has been actively engaging with our OU community in various ways:

- Connecting researchers across campuses
- Creating communities of practice
- Facilitating the development of transdisciplinary proposals to agencies such as the Department of Defense, Department of Energy, National Institutes of Health, and the National Science Foundation
- Hosting research talks, teaming sessions, and meet and greets
- Visiting departments to introduce DISC
- Assisting, coordinating, and supporting proposal writing efforts
- Mentoring undergraduate and graduate students
- Developing machine learning tutorials in collaboration with the OSCER supercomputer team

## DISC DEI Commitment

The Data Institute for Societal Challenges is committed to achieving a diverse, equitable, and inclusive data science community by embracing and valuing each person's unique contributions, background, and perspectives.

Read our full statement on supporting DEI at DISC on our website, [ou.edu/about-disc](https://ou.edu/about-disc)



# RESEARCH ADVANCEMENT EFFORTS

GRANT/RESEARCH WORKSHOPS CO-HOSTED



## RESEARCH TEAM DEVELOPMENT ACTIVITIES



Total of Workshops Cohosted



Cumulative Workshop Attendance

### DISC PARTNERSHIP IN EXTERNAL FUNDING PROPOSAL SUBMISSION

DISC plays an integral role in supporting externally-funding research across OU

### SUBMITTED PROPOSALS



### NUMBER OF PROPOSALS SUBMITTED



### FUNDED PROPOSALS



### NUMBER OF PROPOSALS FUNDED



# RESEARCH SEED FUNDING

DISC expanded its research seed funding program in FY22. This program incentivizes transdisciplinary and convergent research teams focused on tackling grand challenges. Seed funding allows OU researchers to incubate ideas with the potential for future extramural support. DISC also cohosted seed funding competitions with the Stephenson Cancer Center, the Institute for Community and Society Transformation, and Oklahoma Aerospace and Defense Innovation Institute. Additionally, DISC awarded multiple seed awards with its monthly seed funding program.

The seed funding allowed OU researchers in FY22 to:

Generate proof of concepts and results

Hire graduate research assistants

Apply for external funding from agencies such as NSF, DOD, and DOE

Host workshops

Disseminate findings via journal articles and conferences

## DISC SEED FUNDING AWARDS RECAP

Total Seed Funding Awarded

\$240,441

Total Number of Teams

23

Total Number of Researchers

56



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC & SCC SEED FUNDING COMPETITION

### \$100,000 TOTAL AWARD

\$50K AWARDED BY DISC AND \$50K AWARDED BY THE  
STEPHENSON CENTER (SCC)

#### Project

*Automated Pancreatic Tumor Segmentation with  
Improved Capsule Networks*

Team Members	Amount Awarded
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<i>Samuel Cheng</i>	<i>\$80,000</i>
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*Bin Zheng*

*Theresa Thai*

#### Project

*A proof-of-concept study aimed at leveraging cognitive  
computing to optimize patient selection, speed of accrual,  
and on-treatment data capture for phase 1 oncology  
clinical trials at the Stephenson Cancer Center*

Team Members	Amount Awarded
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<i>Abdul Rafeh Naqash</i>	<i>\$20,000</i>
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*Chongle Pan*

*Kun Lu*



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC DIGITAL HUMANITIES SEED FUNDING

### Project

*Air, Water, and Work in Ottawa and Delaware Counties*

Team Members	Amount Awarded
Laurel Smith	\$10,000

### Project

*Congressional Correspondence Handwriting Textract Project*

Team Members	Amount Awarded
Michael Crespin	\$2,500
JA Pryce	

### Project

*Access Granted: Engaging with Fragile Illuminated Manuscripts*

Team Members	Amount Awarded
Bill Endres	\$10,000
Kristi Wyatt	
Bobby Reed	



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC MONTHLY SEED FUNDING PROGRAM

### Project

*Advancing Data Science to Understand Social Attitude Changes Related to Climate Disasters*

Team Members	Amount Awarded
<i>Heather Bedle</i>	<i>\$8,000</i>

### Project

*Leveraging Commuting Data to Understand Diurnal Variation in Poverty Exposure*

Team Members	Amount Awarded
<i>J. Tom Mueller</i>	<i>\$8,000</i>

### Project

*Interacting Genetic and Imaging Biomarkers for Sex Differences in Alzheimer's Disease Risk*

Team Members	Amount Awarded
<i>Yuan Yang</i>	<i>\$10,000</i>
<i>Dee Wu</i>	
<i>Andry Yabluchanshiy</i>	
<i>William Sonntag</i>	





# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC MONTHLY SEED FUNDING PROGRAM

### Project

*Locating, Cataloging, and Assessing Historical Land Ownership Data in Rural African American Communities in Western Oklahoma*

Team Members	Amount Awarded
<i>Kalenda Eaton</i>	<i>\$7,000</i>

### Project

*Increasing Belonging Through Undergraduate Research Experiences for Community College Students interested in Data Science*

Team Members	Amount Awarded
<i>Ann Beutel</i>	<i>\$8,800</i>
<i>Matthias Nollert</i>	

### Project

*Active Learning Method for Fair and Useful Learning to Rank (L2R) in Information Retrieval*

Team Members	Amount Awarded
<i>Jiqun Liu</i>	<i>\$9,800</i>
<i>Chao Lan</i>	



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC MONTHLY SEED FUNDING PROGRAM

### Project

*Quantifying the Availability of Groundwater in Underdeveloped Rural Areas from Geophysical Data*

Team Members	Amount Awarded
<i>Sina Saneiyan</i>	<i>\$6,500</i>

### Project

*Analysis of Single Molecule RNA Sequencing Data to Discover How Viruses Reprogram Host Gene Expression*

Team Members	Amount Awarded
<i>Susan Schroeder</i>	<i>\$10,200</i>

### Project

*The Social and Economic Cost of Brands Staying Silent on Sociopolitical Issues*

Team Members	Amount Awarded
<i>Pankhuri Malhotra</i>	<i>\$10,000</i>
<i>Yashoda Bhagwat</i>	
<i>Nooshin Warren</i>	



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC MONTHLY SEED FUNDING PROGRAM

### Project

*Statistics Helper by Claire Curry, University Libraries*

Team Members	Amount Awarded
<i>Claire Curry</i>	<i>\$10,000</i>

### Project

*A proof-of-concept study aimed at leveraging cognitive computing to optimize patient selection, speed of accrual, and on-treatment data capture for phase 1 oncology clinical trials at the Stephenson Cancer Center*

Team Members	Amount Awarded
<i>Kun Lu</i>	<i>\$10,000</i>

### Project

*The Decision Environment of Resilient Communities*

Team Members	Amount Awarded
<i>Katerina Tsetsura</i>	<i>\$12,433</i>
<i>Dean Hougen</i>	
<i>Xiaochen Zhan</i>	



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC MONTHLY SEED FUNDING PROGRAM

### Project

*A Publicly Available, High-Resolution Dataset on Land Cover Characteristics for the Oklahoma City Metropolitan Area*

Team Members	Amount Awarded
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<i>Jennifer Koch</i>	<i>\$7,208</i>
<i>Kevin Neal</i>	

## DISC/OADII SEED FUNDING PROGRAM

### Project

*Securing Critical Networks from Weaponized Disinformation Attacks: Initial Surveys*

Team Members	Amount Awarded
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<i>Kash Barker</i>	<i>\$10,000 from DISC</i>
<i>Elena Bessarabova</i>	<i>\$10,00 from OADII</i>
<i>Andrés González</i>	
<i>Sridhar Radhakrishnan</i>	



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC/OADII SEED FUNDING PROGRAM

### Project

*Enhancing DoD Vaccine Innovation and Supply for Warfighters and Biodefense*

Team Members	Amount Awarded
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<i>Myongjin Kim</i>	<i>\$10,000 from DISC</i>
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<i>Junying Zhao</i>	<i>\$10,000 from OADII</i>
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## DISC/ICAST SEED FUNDING PROGRAM

### Project

*Understanding Equity and Opportunity for Myanmar Refugee Children and their Families*

Team Members	Amount Awarded
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<i>Vicki Lake</i>	<i>\$10,000 from DISC</i>
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<i>Boo Young Lim</i>	<i>\$20,000 from ICAST</i>
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*June Abbas*

*Wonkyoung Jang*

*Chie Noyori-Corbett*

*Jiening Ruan*

*Sheri Castle*



# DISC SEED FUNDING AWARDS RECAP CONT.

## DISC/ICAST SEED FUNDING PROGRAM

### Project

*Developing Mobile Technology to Assist with Youth Diversion Services*

Team Members	Amount Awarded
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<i>David Mcleod</i>	<i>\$10,000 from DISC</i>
<i>Dean Hougen</i>	<i>\$20,000 from ICAST</i>
<i>Constance Chapple</i>	

### Project

*Longitudinal Development of Children Growing up in Poverty: The Mix of Child, Family, School, and Neighborhood*

Team Members	Amount Awarded
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<i>Shinyoung Jeon</i>	<i>\$10,000 from DISC</i>
<i>Sheri Castle</i>	<i>\$20,000 from ICAST</i>
<i>Liz Frechette</i>	
<i>Mike Wimberly</i>	
<i>Bryce Lowery</i>	



# CURRENT COMMUNITIES OF PRACTICE

## **Brain and Behavior Community of Practice**

This group is working to understand how the human brain controls and learns to control behavior, and how disease impacts these processes. The group includes faculty, postdocs, and senior graduate students in brain imaging, sensing of brain chemistry and motor behavior, data analysis, and computational modeling.

For more information, please contact Andy Fagg at [andrewhfagg@gmail.com](mailto:andrewhfagg@gmail.com)

## **Earth System Science Community of Practice**

This group brings together researchers working on understanding processes in the biosphere, geosphere, hydrosphere, atmosphere, and their linkages. In our conversations, we apply a systems approach, identify synergies and shared research interests around the broader topics of Earth systems science, observation and prediction of the Earth system, and work towards describing these ideas and synergies in one-page summaries to be prepared for emerging funding opportunities and to reach out to program managers of potential funding agencies.

For more information, please contact Jennifer Koch at [jakoch@ou.edu](mailto:jakoch@ou.edu)

## **Digital Humanities Community of Practice**

This group works to bring people together who work in digital humanities or would like to engage in digital humanities work to foster collaboration. Dr. Carrie Schroeder and Dr. Kimberly Marshall are the co-facilitators of these endeavors.

To be added to the Digital Humanities Community of Practice listserv, please contact Jack Wagner at [jwagner19@ou.edu](mailto:jwagner19@ou.edu)

## **Neuroscience Community of Practice**

The Neuroscience Community of Practice is focused on developing deeper research and educational connections between the Neurosurgery department at OUHSC and those working at OU-Norman. This is a relatively broad research area, from single cell to full neural systems, and the meetings to date have reflected this.

For more information, please contact Andy Fagg at [andrewhfagg@gmail.com](mailto:andrewhfagg@gmail.com)

## **Opioid Research Group**

This group has approximately 90 members consisting of faculty, staff, and graduate students across OU's campuses who are interested in research to address the opioid crisis in Oklahoma and the U.S. The goal of the group is to keep abreast of opportunities for opioid-related funding, share ongoing research to foster collaboration and expansion of the research, and, ultimately, use research to develop and implement solutions.

For more information, please contact Erin Maher at [erin.maher@ou.edu](mailto:erin.maher@ou.edu)

## **The Community Engagement Community of Practice**

The OU Community Engagement Community of Practice was cosponsored by the Center for Faculty Excellence and DISC. This community of practice emphasizes community-engaged OU researchers, educators, and scholars across campuses and disciplines.

If you are interested in community-engaged research or service-learning and have questions about this program or other opportunities to learn more about community-engaged research or service learning, please contact Joy Pendley at [pendley@ou.edu](mailto:pendley@ou.edu)

**Additional communities of practice are being planned for Fall 2022**



# DISC MEMBERSHIP & DATA SCIENCE COMMUNITY

## DISC MEMBERSHIP

**DISC provides various benefits to faculty, staff, and postdoctoral scholars interested in becoming a member.** Active members have the opportunity to interact with an ever-growing data science community at OU, as well as the following:

- Grant development services
- Support in developing and interpreting preliminary results
- Advice and support on large collaborative grant proposals
- Access to potential seed funding opportunities
- Letters of support
- Research promotion on the website, newsletters, and social media
- Mentorship opportunities for junior faculty

132 MEMBERS

97 FACULTY

2 POSTDOCTORAL  
RESEARCHERS

11 RESEARCH STAFF

22 UNDERGRAD  
AND GRADUATE  
STUDENTS

## DATA SCIENCE COMMUNITY

The Data Science Community Directory was developed to help researchers, students, and research staff connect across disciplines and facilitate team-building and partnerships at OU. To date, we are continuing to add to our directory to keep assisting the data science community make those invaluable research and education connections. This directory is accessible via [DISC's website](#). Join our data science community today!

287 MEMBERS

201 FACULTY

2 POSTDOCTORAL  
RESEARCHERS

17 RESEARCH  
STAFF

67 UNDERGRAD  
AND GRADUATE  
STUDENTS





# A SAMPLING OF PUBLICATIONS BY DISC MEMBERS AND AFFILIATES

Abshirini, M., Saha, M. C., Altan, M. C., & Liu, Y. (2022). *3D Printed Flexible Microscaled Porous Conductive Polymer Nanocomposites for Piezoresistive Sensing Applications*. *Advanced Materials Technologies*. <https://doi.org/10.1002/admt.202101555>

Badre, A., & Pan, C. (2022). *LINA: A Linearizing Neural Network Architecture for Accurate First-Order and Second-Order Interpretations*. *IEEE Access*, *10*, 36166–36176. <https://doi.org/10.1109/ACCESS.2022.3163257>

Beauxis-Aussalet, E., Behrisch, M., Borgo, R., Chau, D. H., Collins, C., Ebert, D., El-Assady, M., Endert, A., Keim, D. A., Kohlhammer, J., Oelke, D., Peltonen, J., Riveiro, M., Schreck, T., Strobel, H., van Wijk, J. J., & Rhyne, T. M. (2021). *The Role of Interactive Visualization in Fostering Trust in AI*. *IEEE Computer Graphics and Applications*, *41*(6). <https://doi.org/10.1109/MCG.2021.3107875>

Cai, C., Kim, P., Connor, T. H., Liu, Y., & Floyd, E. L. (2022). *Reducing the particles generated by flushing institutional toilets*. *Journal of Occupational and Environmental Hygiene*, *19*(5). <https://doi.org/10.1080/15459624.2022.2053693>

Cao, Y., & Lan, C. (2022a). *A model-agnostic randomized learning framework based on random hypothesis subspace sampling*. *39th International Conference on Machine Learning (ICML)*.

Cao, Y., & Lan, C. (2022b). *Active approximately metric-fair learning*. *38th Conference on Uncertainty in Artificial Intelligence (UAI)*.

Chandrashekhar, R., Wang, H., Rippetoe, J., James, S. A., Fagg, A. H., & Kolobe, T. H. A. (2022). *The Impact of Cognition on Motor Learning and Skill Acquisition Using a Robot Intervention in Infants With Cerebral Palsy*. *Frontiers in Robotics and AI*, *9*. <https://doi.org/10.3389/frobt.2022.805258>

Chen, J., Liu, Q., & Kim, M. (2022). *Gender gap in tenure and promotion: Evidence from the economics Ph.D. class of 2008*. *Southern Economic Journal*, *88*(4). <https://doi.org/10.1002/soej.12567>

Chen, X., Wang, X., Zhang, K., Fung, K.-M., Thai, T. C., Moore, K., Mannel, R. S., Liu, H., Zheng, B., & Qiu, Y. (2022). *Recent advances and clinical applications of deep learning in medical image analysis*. *Medical Image Analysis*, *79*, 102444. <https://doi.org/10.1016/j.media.2022.102444>



# PUBLICATIONS BY DISC MEMBERS & AFFILIATES CONT.

- Chen, X., Zhang, K., Abdoli, N., Gilley, P. W., Wang, X., Liu, H., Zheng, B., & Qiu, Y. (2022). *Transformers Improve Breast Cancer Diagnosis from Unregistered Multi-View Mammograms*. *Diagnostics*, 12(7). <https://doi.org/10.3390/diagnostics12071549>
- Chen, Y., & Liu, Q. (2022). *Signaling Through Advertising When an Ad Can Be Blocked*. *Marketing Science*, 41(1). <https://doi.org/10.1287/mksc.2021.1288>
- Chenin, J., & Bedle, H. (2022). *Unsupervised Machine Learning, Multi-Attribute Analysis for Identifying Low Saturation Gas Reservoirs within the Deepwater Gulf of Mexico, and Offshore Australia*. *Geosciences*, 12(3), 132. <https://doi.org/10.3390/geosciences12030132>
- Danala, G., Desai, M., Ray, B., Heidari, M., Maryada, S. K. R., Prodan, C. I., & Zheng, B. (2022). *Applying Quantitative Radiographic Image Markers to Predict Clinical Complications After Aneurysmal Subarachnoid Hemorrhage: A Pilot Study*. *Annals of Biomedical Engineering*, 50(4). <https://doi.org/10.1007/s10439-022-02926-z>
- Danala, G., Maryada, S. K., Islam, W., Faiz, R., Jones, M., Qiu, Y., & Zheng, B. (2022). *A Comparison of Computer-Aided Diagnosis Schemes Optimized Using Radiomics and Deep Transfer Learning Methods*. *Bioengineering*, 9(6), 256. <https://doi.org/10.3390/bioengineering9060256>
- Danala, G., Ray, B., Desai, M., Heidari, M., Mirniaharikandehei, S., Maryada, S. K. R., & Zheng, B. (2022). *Developing new quantitative CT image markers to predict prognosis of acute ischemic stroke patients*. *Journal of X-Ray Science and Technology*, 30(3). <https://doi.org/10.3233/XST-221138>
- Demir, F. (2022). *IMF conditionality, export structure and economic complexity: The ineffectiveness of structural adjustment programs*. *Journal of Comparative Economics*. <https://doi.org/10.1016/j.jce.2022.04.003>
- Demir, F., & Hu, C. (2022). *Institutional similarity, firm heterogeneity and export sophistication*. *The World Economy*, 45(4), 1213–1241. <https://doi.org/10.1111/twec.13201>
- Demir, F., Hu, C., Liu, J., & Shen, H. (2022). *Local corruption, total factor productivity and firm heterogeneity: Empirical evidence from Chinese manufacturing firms*. *World Development*, 151, 105770. <https://doi.org/10.1016/j.worlddev.2021.105770>
- Demir, F., & Lee, S. (2022). *Foreign direct investment, capital accumulation, and growth: The rise of the Emerging South*. *International Review of Economics & Finance*, 80, 779–794. <https://doi.org/10.1016/j.iref.2022.02.044>



# PUBLICATIONS BY DISC MEMBERS & AFFILIATES CONT.

Demir, F., & Razmi, A. (2022). *The Real Exchange Rate and Development Theory, Evidence, Issues and Challenges*. *Journal of Economic Surveys*, 36(2), 386–428. <https://doi.org/10.1111/joes.12418>

Demir, F., & Tabrizy, S. S. (2022). *Gendered Effects of Sanctions on Manufacturing Employment: Evidence from Iran*. *Review of Development Economics*.

Dukes, A., Liu, Q., & Shuai, J. (2022). *Skippable Ads: Interactive Advertising on Digital Media Platforms*. *Marketing Science*, 41(3). <https://doi.org/10.1287/mksc.2021.1324>

Ebert, D. S., Fisher, B., & Gaither, K. (2018). *Introduction to the minitrack on interactive visual analytics and visualization for decision making*. In *Proceedings of the Annual Hawaii International Conference on System Sciences* (Vols. 2018-January). <https://doi.org/10.24251/hicss.2022.209>

Esteves, R. B., Liu, Q., & Shuai, J. (2022). *Behavior-based price discrimination with nonuniform distribution of consumer preferences*. *Journal of Economics and Management Strategy*, 31(2). <https://doi.org/10.1111/jems.12466>

Feng, X., Barcelos, G., Gaboardi, J. D., Knaap, E., Wei, R., Wolf, L. J., Zhao, Q., & Rey, S. J. (2022). *spopt: a python package for solving spatial optimization problems in PySAL*. *Journal of Open Source Software*, 7(74), 3330. <https://doi.org/10.21105/joss.03330>

Ferraro, A. C., Maher, E. J., & Grinnell-Davis, C. (2022). *Family ties: A quasi-experimental approach to estimate the impact of kinship care on child well-being*. *Children and Youth Services Review*, 137, 106472. <https://doi.org/10.1016/J.CHILDYOUTH.2022.106472>

Gai, T., Thai, T., Jones, M., Jo, J., & Zheng, B. (2022). *Applying a radiomics-based CAD scheme to classify between malignant and benign pancreatic tumors using CT images*. *Journal of X-Ray Science and Technology*, 30(2). <https://doi.org/10.3233/XST-211116>

Ghani, M. U., Fajardo, L. L., Omoumi, F., Yan, A., Jenkins, P., Wong, M., Li, Y., Peterson, M. E., Callahan, E. J., Hillis, S. L., Zheng, B., Wu, X., & Liu, H. (2021). *A phase sensitive x-ray breast tomosynthesis system: Preliminary patient images with cancer lesions*. *Physics in Medicine and Biology*, 66(21). <https://doi.org/10.1088/1361-6560/ac2ea6>



# PUBLICATIONS BY DISC MEMBERS & AFFILIATES CONT.

Ghani, M. U., Omoumi, F. H., Wu, X., Fajardo, L. L., Zheng, B., & Liu, H. (2022). *Evaluation and comparison of a CdTe based photon counting detector with an energy integrating detector for X-ray phase sensitive imaging of breast cancer*. *Journal of X-Ray Science and Technology*, 30(2). <https://doi.org/10.3233/XST-211028>

He, L., Kim, M., & Liu, Q. (2022). *Competitive response to unbundled services: An empirical look at Spirit Airlines*. *Journal of Economics and Management Strategy*, 31(1). <https://doi.org/10.1111/jems.12448>

Heidari, M., Lakshmivarahan, S., Mirniaharikandehei, S., Danala, G., Maryada, S. K. R., Liu, H., & Zheng, B. (2021). *Applying a Random Projection Algorithm to Optimize Machine Learning Model for Breast Lesion Classification*. *IEEE Transactions on Biomedical Engineering*, 68(9). <https://doi.org/10.1109/TBME.2021.3054248>

Herren, B., Saha, M. C., Altan, M. C., & Liu, Y. (2022). *Funnel-Shaped Floating Vessel Oil Skimmer with Joule Heating Sorption Functionality*. *Polymers*, 14(11), 2269. <https://doi.org/10.3390/polym14112269>

Jones, M. A., Faiz, R., Qiu, Y., & Zheng, B. (2022). *Improving mammography lesion classification by optimal fusion of handcrafted and deep transfer learning features*. *Physics in Medicine and Biology*, 67(5). <https://doi.org/10.1088/1361-6560/ac5297>

Kieft, B., Li, Z., Bryson, S., Hettich, R. L., Pan, C., Mayali, X., & Mueller, R. S. (2021). *Phytoplankton exudates and lysates support distinct microbial consortia with specialized metabolic and ecophysiological traits*. *Proceedings of the National Academy of Sciences*, 118(41). <https://doi.org/10.1073/pnas.2101178118>

La Marca, K., & Bedle, H. (2022). *User vs. machine-based seismic attribute selection for unsupervised machine learning techniques: Does human insight provide better results than statistically chosen attributes?* In *Advances in Subsurface Data Analytics* (pp. 3–30). Elsevier. <https://doi.org/10.1016/B978-0-12-822295-9.00002-9>

Liu, Q., Nedelescu, D., & Gu, J. (2021). *The impact of strategic agents in two-sided markets*. *Journal of Economics/ Zeitschrift Fur Nationalokonomie*, 134(3). <https://doi.org/10.1007/s00712-021-00753-9>

Loginova, O., Wang, X. H., & Liu, Q. (2022). *The impact of multi-homing in a ride-sharing market*. *Annals of Regional Science*. <https://doi.org/10.1007/s00168-022-01120-2>



# PUBLICATIONS BY DISC MEMBERS & AFFILIATES CONT.

Lubo-Robles, D., Devegowda, D., Jayaram, V., Bedle, H., Marfurt, K. J., & Pranter, M. J. (2022). *Quantifying the sensitivity of seismic facies classification to seismic attribute selection: An explainable machine-learning study*. *Interpretation*, 10(3), SE41–SE69. <https://doi.org/10.1190/INT-2021-0173.1>

Maher, E. J., Gerlinger, J., Wood, A. D., & Ho, K. (2021). *Won't You be My Neighbor? Neighborhood Characteristics Associated with Mass Shootings in the USA*. *Race and Social Problems*. <https://doi.org/10.1007/s12552-021-09350-3>

Marashizadeh, P., Abshirini, M., Saha, M., Huang, L., & Liu, Y. (2022). *Functionalization Enhancement on Interfacial Properties Between Graphene and ZnO NW/Ep A Molecular Dynamics Simulation Study*. *Advanced Theory and Simulations*, 5(6). <https://doi.org/10.1002/adts.202200010>

Merchan-Breuer, D. A., Murphy, E., Berka, B., Nova, L. C. M., Liu, Y., & Merchan-Merchan, W. (2022). *Synthesis of Carbonaceous Hydrophobic Layers through a Flame Deposition Process*. *Applied Sciences*, 12(5), 2427. <https://doi.org/10.3390/app12052427>

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Disclaimer: Not presented as a fully comprehensive list of DISC/ DISC-Member FY 22 publications.



# DISC DIRECTION FOR THE FUTURE

Establishing OU as a nationally recognized leader for data science research and data-driven solutions to societal challenges is a continued commitment for DISC in FY23. To work towards accomplishing this, DISC will commit to the following goals.



## DISC FY23 GOALS

- Continue hosting research team-building workshops in response to federal and state grant funding opportunities
- Increase our submitted funding applications in data science or data enabled by 15%
- Expand our guest speaker program
- Establish named student data science/data science scholarships funded by industry leaders and begin recruiting student DISC fellows
- Continue our commitment to provide administrative and technical support and seed funding for developing data science and data-enabled research proposals
- Establish a community and corporate affiliates program
- Develop and grow OU stakeholder training in data analytics and data-enabled research techniques
- Increase our DISC membership by 10%
- Host DISC's first Annual Data Science Symposium

