AI IN HEALTH CONFERENCE

HOSTED BY THE KEN KENNEDY INSTITUTE

November 7, 2022 | Workshop November 8-9, 2022 | Conference Houston, Texas

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aihealthconference.com



kenkennedy.rice.edu

MESSAGE FROM THE KEN KENNEDY INSTITUTE LEADERSHIP

The Ken Kennedy Institute at Rice University is pleased to offer the inaugural AI in Health Conference in Houston, TX. Thank you for joining us for an exciting two days of cutting-edge conversations on artificial intelligence in healthcare and public health. The conference features a remarkable lineup of invited speakers, technical talks, an exhibit hall, networking receptions, poster presentations, and a pre-conference workshop on Monday.

The AI in Health Conference will take place in Houston, home of the largest medical center in the world — the Texas Medical Center — which hosts 60+ member institutions that are visited by 10 million patients each year. The intersection of healthcare and artificial intelligence holds potential unlike any other innovation the medical industry has seen before. Artificial intelligence's ability to operate and automate tasks at heightened speed, efficiency, and accuracy has already made an impact on day-to-day hospital care and administrative functions. Our conference program will address the current state of artificial intelligence in health and showcase a research-based outlook on the next 10 years.

Conferences such as this foster innovation by encouraging new ideas, research, and discussions. We look forward to the conversations that will occur in the next few days and the partnerships that will spark from them.

Monday will feature a pre-conference workshop on reading, assembling, analyzing, and designing genomic data. On Tuesday and Wednesday, our speakers will highlight genomics, imaging, mental health, transparency and interpretation of health, and adaptive health topics with short technical talks included on both days.

Join us on Tuesday for a hot chocolate station and conclude the day with our Sponsor Networking Reception that includes wine tasting with sommeliers, a specialty cheese selection, and heavy appetizers. Wednesday will feature an ice cream bar before wrapping up the conference with a Poster Networking Session to showcase exciting research happening in the field.

The Ken Kennedy Institute at Rice University is committed to supporting groundbreaking research, educating innovators, and connecting across industries by bringing together thought leaders from around the world with expertise in artificial intelligence, data, and computing. We are thrilled to host this conference at the service of our regional and global artificial intelligence community.

We are grateful to our sponsors, attendees, and speakers who share our enthusiasm and seek the opportunity to support and engage with the community. Thank you to our conference committee for their many contributions to this year's conference. Finally, we would like to say a special thank you to Todd Treangen, Vicky Yao, Guha Balakrishnan, Ashok Veeraraghavan, Ben Hu, and Akane Sano for spearheading our conference tracks.

On behalf of the conference committee, our fellow constituents and sponsors, Rice University, and the amazing Ken Kennedy Institute team, thank you for being here.

Lydia E. Kavraki Director, The Ken Kennedy Institute

Angela D. Wilkins Executive Director, The Ken Kennedy Institute

2022 PROGRAM COMMITTEE

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RICE KEN KENNEDY AI, Data, and Computing for Global Impact

The Ken Kennedy Institute is a multidisciplinary group that works collaboratively on groundbreaking research in artificial intelligence, data, and computing. We foster a clear and strategic pathway to real-world impact.

We envision a world where innovation in computing and data improves the human condition - we cannot achieve this without you. Please contact us with your questions and ideas at kenkennedy@rice.edu. in

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AI IN HEALTH CONFERENCE CODE OF CONDUCT

The organizers invite all attendees, sponsors/exhibitors, speakers, media, volunteers, and other participants to help us realize a safe and positive conference experience for everyone. The Ken Kennedy Institute works to increase tolerance, opportunity, and diversity in an effort to continually encourage the open exchange of ideas. For these reasons, the Institute is committed to providing a harassment-free experience at all the events it organizes. If you experience or witness harassment or discriminatory behavior at the conference, report this promptly to kenkennedy@rice.edu.

The conference venue is shared with members of the public that are not attendees of the conference; please be respectful to all patrons of these locations.

Please note that audio recording, videotaping, and/or photography of any portion of the conference material is strictly prohibited without prior consent of the staff.



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KEYNOTE SPEAKERS TECHNICAL PROGRAM NETWORKING RECEPTIONS EXHIBIT HALL STUDENT POSTER SESSION energyhpc.rice.edu

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KEYNOTE WORKSHOP SPEAKERS



SERGEY KOREN National Human Genome Research Institute, NIH



NICHOLAS NAVIN UT MD Anderson Cancer Center

INVITED WORKSHOP SPEAKERS



GENEVERA ALLEN Rice University; Texas Children's Hospital; Baylor College of Medicine



FRITZ SEDLAZECK Baylor College of Medicine



GE (ESTHER) LOU Rice University



SO HYUN (JULIE) PARK Rice University



VICKY YAO Rice University



TODD TREANGEN Rice University

WORKSHOP | MONDAY, NOVEMBER 7

Analyzing and Designing Genomes		Networking	Reading and Assembling Genomes	Welcome
8:15 a.m 9:00 a.m.	N	Check-in + Breakfast	>>> Exhibit Hall	
9:00 a.m 9:15 a.m.	W	Welcome >> Auditorium Speaker(s): Todd Treangen, Rice University; Vicky Yao, Rice University		
9:15 a.m 10:00 a.m.	R	A Complete Diploid Human Genome >> Auditorium Speaker(s): Sergey Koren, National Human Genome Research Institute, NIH		
10:00 a.m 10:25 a.m.	Ν	Coffee Break)) Ext	ibit Hall	
10:25 a.m 10:45 a.m.	R	Genomic Data Flow and Reporting for One Million All of Us Participants Auditorium Speaker(s): Donna M. Muzny, Baylor College of Medicine		
10:45 a.m 11:15 a.m.	R	Profiling Bacterial Host Range of Antibiotic Resistance Genes Using EpicPCR, Long-read and Short-read Metagenomics >>>> Auditorium Speaker(s): Ge (Esther) Lou, Rice University		
11:15 a.m 12:00 p.m.	R	Moderator(s): Todd Trea Speaker(s): Sergey Kor	ling Genomes Panel)) Auditorium angen, Rice University ren, National Human Genome Research Institute, N Jniversity; Fritz Sedlazeck, Baylor College of Mec	
12:00 p.m. – 1:00 p.m.	Ν	Lunch)) Exhibit Ha	II	
1:00 p.m 1:45 p.m.	A		ne Cell at a Time)) Auditorium Nick) Navin, UT MD Anderson Cancer Center	
1:45 p.m. – 2:10 p.m.	Ν	Coffee Break)) Ext	ibit Hall	
2:10 p.m. – 2:30 p.m.	A	Myeloid Leukemia an	Classification of Prognostic Genetic Abnormand Acute Promyelocytic Leukemia >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	
2:30 p.m. – 3:00 p.m.	A	Modifications Induce	rsis and Accurate Quantification of Unintender d by CRISPR/Cas9 Gene Editing >> Auditor ulie) Park, Rice University	-
3:00 p.m. – 3:45 p.m.	A	Speakers: Vicky Yao, R	ing Genomes Panel >> Auditorium ice University; Nicholas (Nick) Navin, UT MD And e) Park, Rice University; Genevera Allen, Rice Univ	
3:45 p.m. – 4:00 p.m.	W	Closing)) Auditoriu Speaker(s): Todd Tream	m Igen, Rice University; Vicky Yao, Rice University	
4:00 p.m. – 5:00 p.m.	Ν	RAD Genomics Socia	Exhibit Hall	





KEYNOTE CONFERENCE SPEAKERS



LAURA BARNES University of Virginia



RICHARD GIBBS Baylor College of Medicine



JON TAMIR The University of Texas at Austin



FEI WANG Cornell University

INVITED CONFERENCE SPEAKERS



GUHA BALAKRISHNAN Rice University



KRISTY BROCK UT MD Anderson Cancer Center





THEODORACAROLINE CHUNGCHASPARIUT MD AndersonTexas A&M UniversityCancer Center



STUART CORR Houston Methodist



LAURENCE COURT UT MD Anderson Cancer Center



CHARLES GREEN UT Medical School at Houston



XIA (BEN) HU Rice University







ROOZBEH JAFARI Texas A&M University



LYDIA KAVRAKI Rice University



YEJIN KIM UT Health Science Center at Houston



DIEGO R. MARTIN Houston Methodist Research Institute



BADRI ROYSAM University of Houston



AKANE SANO Rice University



ASHOK VEERARAGHAVAN Rice University



SONIA VILLAPOL Houston Methodist Research Institute



ANGELA WILKINS Rice Universtiy



HUIYUAN YANG Rice University



WEI YANG UT MD Anderson Cancer Center



JOSH YUNG UT MD Anderson Cancer Center

AI IN HEALTH 2022 | TUESDAY, NOV. 8

Adaptive Health G Genomics		Transparency and Interpretation of HealthImaging	NetworkingTechnical TalkWelcome
8:15 a.m. – 9:00 a.m.	N	Check-in + Breakfast)) Exhibit Hall	
9:00 a.m 9:05 a.m.	W	Welcome >> Auditorium Speaker(s): Angela Wilkins, The Ken Kennedy Institute, Rice University	
9:05 a.m 9:25 a.m.	W	Al in Health: Progress and Prospects >>>> Auditorium Speaker(s): Lydia Kavraki, The Ken Kennedy Institute, Rice University	
9:25 a.m 10:05 a.m.	G	Genomics and Health: All the Data that are Fit to Munge Auditorium Speaker(s): Richard Gibbs, Human Genome Sequencing Center, Baylor College of Medicine	
10:05 a.m 10:30 a.m.	G	What Can DNA Sequencing and the Gut Microbiome Tell Us About Concussions? Auditorium Speaker(s): Sonia Villapol, Houston Methodist Research Institute	
10:30 a.m 11:00 a.m.	Ν	Coffee Break)) Exhibit Hall	
11:00 a.m 11:15 a.m.	T	Al for Racial Health Equity >>>> Auditorium Speaker(s): Kirsten Ostherr, Rice University	
11:15 a.m 11:30 a.m.	т	Did the Pandemic Politically Polarize Vaccine Conversations on Twitter? A Causal Monitoring Study >> Auditorium Speaker(s): Piyush Anand, Rice University	
11:30 am - 11:45 am	Т	Identifying Polyploid Cells in Tissue Images via Instance-Aware Semantic Segmentation >> Auditorium Speaker(s): Courtney Rouse, Southwest Research Institute	
	т	Semi-Supervised Learning and Data Augmentation in Wearable-based Momentary Stress Detection in the Wild >> Auditorium Speaker(s): Han Yu, Rice University	
12:00 p.m. – 1:00 p.m.	N	Lunch)) Exhibit Hall	
1:00 p.m. – 1:30 p.m.	I	Robust Computational Magnetic Resonance Imaging with Deep Learning Auditorium Speaker(s): Jon Tamir, The University of Texas at Austin	
1:30 p.m. – 1:45 p.m.	I	Automated Cell and Tissue Image Analysis Auditorium Speaker(s): Badri Roysam, University of Houston	

1:45 p.m. – 2:00 p.m.	I	The Role of Al in Advancing Image Guided Cancer Therapy >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2:00 p.m. – 2:30 p.m.	N	Hot Chocolate Break)) Exhibit Hall
2:30 p.m. – 2:45 p.m.	I	Machine and Artificial Intelligence in Radiology - Revolutionizing Healthcare Auditorium Speaker(s): Diego R. Martin, Houston Methodist Research Institute
2:45 p.m 3:00 p.m.	I	Learning to Reconstruct CT Scans from Few Planar X-rays >> Auditorium Speaker(s): Guha Balakrishnan, Rice University
3:00 p.m. – 3:15 p.m.	I	Al to Improve Access to Radiotherapy Across the World >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
3:15 p.m 3:45 p.m.	N	Hot Chocolate Break >> Exhibit Hall
3:45 p.m. – 4:30 p.m.		Imaging Panel >> Auditorium Moderator(s): Caroline Chung, UT MD Anderson Cancer Center Speaker(s): Caroline Chung, UT MD Anderson Cancer Cente; Ashok Veeraraghavan, Rice University; Wei Yang, UT MD Anderson Cancer Center; Josh Yung, UT MD Anderson Cancer Center; Stuart Corr, Houston Methodist
4:30 p.m. – 6:00 p.m.	N	Sponsor Networking Reception)) Exhibit Hall

AI IN HEALTH 2022 | WEDNESDAY, NOV. 9

Adaptive Health Genomics		Transparency and Interpretation of HealthImaging	NetworkingTechnical TalkWelcome
8:15 a.m 9:00 a.m.	N	Check-in + Breakfast)) Exhibit Hall	
9:00 a.m. – 9:05 a.m.	W	Introduction to Transparency and Interpretation of Health >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	
9:05 a.m 9:45 a.m.	H	Towards Building Trustworthy Al Models in Clinical Medicine: Accuracy, Interpretability, Fairness, and All That >> Auditorium Speaker(s): Fei Wang, Cornell University	
9:45 a.m. – 10:30 a.m.	н	Transparency and Interpretation of Health Panel >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	
10:30 a.m 11:00 a.m.	N	Coffee Break)) Exhibit Hall	
11:00 a.m 11:15 a.m.	T	Exploiting Social Graph Networks for Health Prediction >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	
11:15 a.m 11:30 a.m.	Т	Biomedical Knowledge Graph for Drug Repu Speaker(s): Liang-Chin Huang, Melax Tech	urposing 🔰 Auditorium
11:30 a.m 11:45 a.m.	т	Deep Learning Based Affine Predictors for The Case of Type 1 Diabetes (T1D) Therapy Speaker(s): Marzia Cescon, University of Housto	>> Auditorium
11:45 a.m. – 12:00 p.m.	T	Optimal Transport-Based Analysis of ECG Signals >>>> Auditorium Speaker(s): Cesar Uribe, Rice University	
12:00 p.m 1:00 p.m.	N	Lunch)) Exhibit Hall	
1:00 p.m. – 1:05 p.m.	W	Introduction to Adaptive Health) Auditorium Speaker(s): Akane Sano, Rice University	
1:05 p.m. – 1:45 p.m.	A	Sensing and Intervention for Smart Health Speaker(s): Laura E. Barnes, University of Virgir	

1:45 p.m. – 2:15 p.m.	N	Ice Cream Break >> Exhibit Hall
2:15 p.m. – 2:35 p.m.	A	Bayesian Adaptive Trial Designs >> Auditorium Speaker(s): Charles Green, University of Texas Medical School at Houston
2:35 p.m. – 2:55 p.m.	A	Identifying Subpopulations with Different Alzheimer's Disease Risk and Progression)) Auditorium Speaker(s): Yejin Kim, University of Texas Health Science Center at Houston
2:55 p.m 3:15 p.m.	A	More to Less (M2L): Enhanced Health Recognition in the Wild with Reduced Modality of Wearable Sensors)) Auditorium Speaker(s): Huiyuan Yang, Rice University
3:15 p.m. – 3:45 p.m.	A	Adaptive Health Panel >> Auditorium Moderator(s): Akane Sano, Rice University Speaker(s): Yejin Kim, University of Texas Health Science Center at Houston; Laura E. Barnes, University of Virginia; Charles Green, University of Texas Medical School at Houston
3:45 p.m. – 5:00 p.m.	N	Poster Networking Reception)) Exhibit Hall

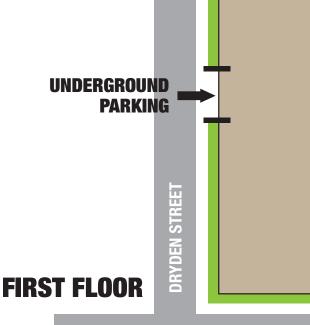


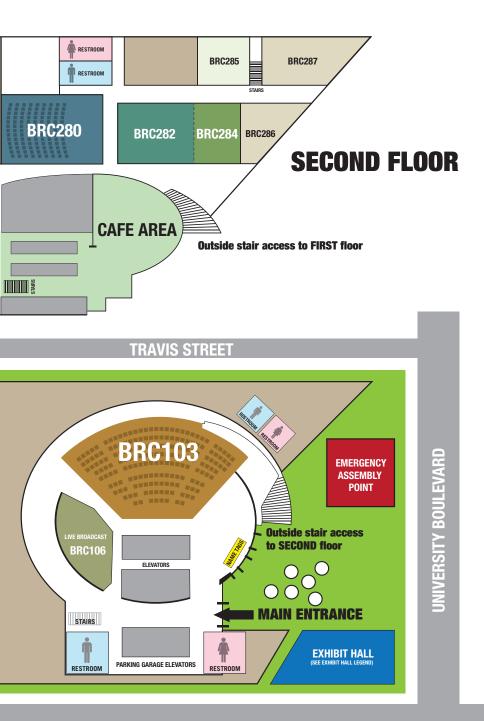
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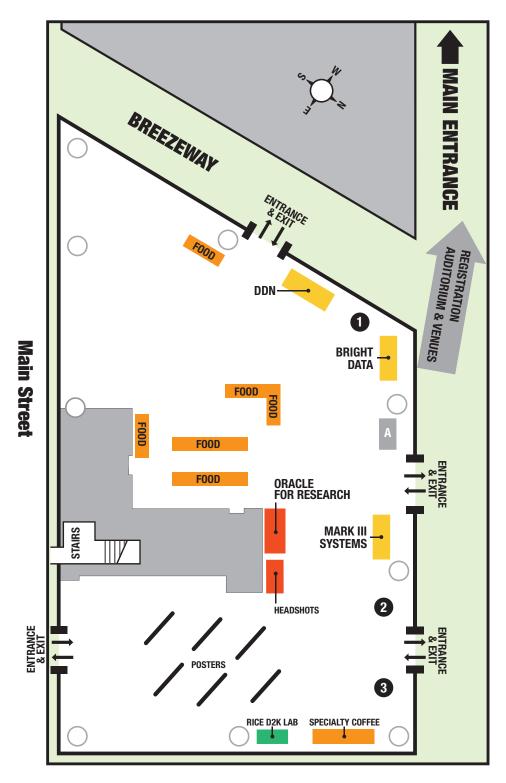






MAIN STREET

EXHIBIT HALL AND SPONSOR EXHIBITS





SPONSOR INDEX

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A The University of Texas MD Anderson Cancer Center

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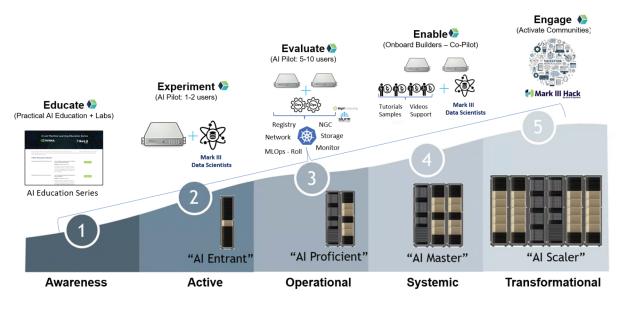
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POSTERS

3D Computed Tomography Scans Reconstruction from Few Planar X-Rays with Neural Fields

Yiran Sun, Anil Vadathya, Ashok Veeraraghavan, Guha Balakrishnan (Rice University)

A Bacteria-Specific Machine Learning Study of Individual Antimicrobial Peptide Activity

Hamid Teimouri, Angela Medvedeva (Rice University)

AI-Enabled Proactive mHealth

Muhammad Sulaiman (UiT The Arctic University of Norway)

An Active Machine Learning Model for Targeted Mass Spectrometry Data Analysis

Duran Bao, Qingbo Shu, Christopher Lyon, Tony Hu, Jia Fan (Tulane University)

An Al Approach to Streamline Plasma Amino Acid Analysis in Clinical Labs

Hector Klie, Arturo Klie (DeepCast.ai), Van Leung-Pineda (Children's Healthcare of Atlanta)

Bias Reducing Multitask Learning on Mental Health Prediction

Khadija Zanna, Kusha Sridhar, Han Yu, Akane Sano (Rice University)

Black Box Insights: Transparency in Health Insurance Claim Denials

Aaron Glick, Carlos Bernal, Dhini Nasution, Ashish Gupta (Texas Medical Center)

Burnout in Shift Workers: Analysis and Prediction

Alicia Choto Segovia, Han Yu, Yufei Shen, Gia Braddock, Akane Sano (Rice University), Asami Itoh, Ryota Sakamoto, Motomu Shimaoka (Mie University)

Characterizing Spatial and Temporal Host Innate Immune Responses to SARS-Cov-1 and SARS-Cov-2 Infection in Pathologically Relevant Human Lung Epithelial Cells

Vivian Tat, Aleksandra Drelich, George Golovko, Jason Hsu, Chien-Te Tseng (The University of Texas Medical Branch at Galveston), Kempaiah Rayavara Kempaiah (Southern Research Institute)

Conditions for Trust in Al-Augmented Clinical Decision-Making

Meghan Hurley, Benjamin Lang, Kristin Kostick-Quenet, Natalie Dorfman, Holland Kaplan, Jennifer Blumenthal-Barby (Baylor College of Medicine)

CraveSense: Measuring Craving Moments in Opioid Use Disorders

Zachary King, Huiyuan Yang, Bishal Lamichane, Natalie Finley, Ashutosh Sabharwal, Akane Sano (Rice University), Nidal Moukaddam, Ramiro Salas, Macarena Aloi, Zainab Alhilal (Baylor College of Medicine)

Emu: Species-Level Microbial Community Profiling of Full-Length 16S rRNA Oxford Nanopore Sequencing Data

Kristen Curry, Qi Wang, Michael Nute, Todd Treangen (Rice University) and Alexander Dilthey (Institute of Medical Microbiology and Hospital Hygiene)

How Students Illustrate AI in Healthcare

Jordan Tidwell (Debakey High School for Health Professions)

POSTERS | CONTINUED

Improving Deep Learning-Based Segmentation Accuracy of Brain Tumors Based on MRI Image Quality Metrics

Rajarajeswari Muthusivarajan, Joshua Yung, James Long, Caroline Chung, David Fuentes (The University of Texas MD Anderson Cancer Center), Adrian Celaya (Rice University), Satish Viswanath (Case Western Reserve University), Daniel Marcus (Washington University School of Medicine)

Investigating the Effect of Different Treatments on Exercise-Induced Hypoglycemia in Type 1 Diabetes

Mehrad Jaloli, Marzia Cescon (University of Houston)

Multimodal Digital Monitoring for Meal Characterization in Hispanic/Latino Adults with or at Risk of Type 2 Diabetes Mellitus

Amruta Pai, Souptik Barua, Ashutosh Sabharwal (Rice University), Rony Santiago, Namino Glantz, Wendy Bevier, David Kerr (Sansum Diabetes Research Institute)

On the Spread of Multi-Competitive Viruses

Sebin Gracy, Cesar Uribe (Rice University)

Pre-Trained Deep Learning Algorithms for Breast Cancer Detection

Mina Moe (Publicis Groupe)

Precision Phenotyping of Aortic Regurgitation via K-means Clustering

Xin Tan, Meng Li (Rice University), Maan Malahfji, Dipan Shah (Houston Methodist Hospital)

Probabilistic Record Linkage of Medical Records: An Evaluation of Current Methods

Nessa Kim, Angela Cao (Rice University)

Seizure Prediction and Detection Using Physiological Signals from Wearable Device

Sruthi Gopinath Karicheri, Zulfi Haneef (Baylor College of Medicine), Han Yu, Akane Sano (Rice University)

The Importance of Facilitating Goal-Concordant Care (GCC) in a Pandemic: The MD Anderson Experience with Hospitalized COVID-19 Positive Patients

Mayoora Muthu, Nico Nortje, Chingyi Young (The University of Texas MD Anderson Cancer Center), Anastasia Turin (Palantir)

Using a Novel Natural Language Processing Algorithm to Identify Sleep Parameters from Polysomnography Reports and its Association with Age

Mahbubur Rahman, Sara Nowakowski, Javad Razjouyan (Center for Innovations in Quality, Effectiveness and Safety), Ritwick Agrawal, Amir Sharafkhaneh (Baylor College of Medicine), Aanand Naik (University of Texas School of Public Health)

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