



# Heartland Workshop on Heart Sounds and AI

The Future of Heart Sounds for Diagnosing Heart Diseases in the Age of AI

Sponsored by the University of Nebraska Medical Center and the University of Nebraska-Lincoln College of Engineering, this workshop will provide an opportunity for researchers and practitioners in heart sounds and artificial intelligence (AI) to learn and collaborate on using new technologies and machine learning in their field of research or practice.

## TARGET AUDIENCE

This workshop is designed for physicians in the specialty of cardiology, scientists, academic researchers, and hardware and software engineers.

## WORKSHOP OBJECTIVES

At the conclusion of this workshop, the participant should be better able to:

1. Describe the role of AI in health care.
2. Discover techniques and instruments utilizing AI to aid cardiology patients.
3. Discuss the advancements in the analysis of heart sounds for diagnosing heart disease.

## DATES AND LOCATION

- **Thursday, June 20, 2024** – **Pre-Workshop AI Tutorial / Tour / Reception** (Optional)

2:00 – 6:15 p.m.

UNMC Michael F. Sorrell Center for Health Science Education – Room 1005

619 S 42<sup>nd</sup> Street, Omaha, NE 68105

- **Friday, June 21, 2024** – **Heart Sounds and AI Workshop**

7:30 a.m. – 5:45 p.m.

UNMC Fred & Pamela Buffett Cancer Center – Room 0.12.103

505 S 45<sup>th</sup> Street, Omaha, NE 68105

## REGISTRATION FEES

- General Registration – \$100
- University of Nebraska Students/Employees – \$20

The deadline to register for this workshop is Friday, June 14, 2024.

## ACCREDITATION



JOINTLY ACCREDITED PROVIDER™  
INTERPROFESSIONAL CONTINUING EDUCATION

In support of improving patient care, University of Nebraska Medical Center is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

The University of Nebraska Medical Center designates this live activity for a maximum of 9.0 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## QUESTIONS

Contact Missy Edwards at 402-559-5145 or send an email to [missy.edwards@unmc.edu](mailto:missy.edwards@unmc.edu).

## REGISTER NOW!

[www.engineering.unl.edu/heartsounds-ai-workshop](http://www.engineering.unl.edu/heartsounds-ai-workshop)



# Heartland Workshop on Heart Sounds and AI

## Thursday, June 20

- 2:00 p.m. Registration
- 2:30 p.m. Tour of Davis Global Center
- 3:15 p.m. AI Tutorial  
*The tutorial will provide introductory information on AI and its applications in Health Sciences*  
M.R. Hasan, PhD
- 5:15 p.m. Reception / Networking
- 6:15 p.m. Adjourn

## Friday, June 21

- 7:30 a.m. Breakfast / Registration
- 8:00 a.m. Opening Remarks  
Edward O'Leary, MD, MBA, MHCM; Hani Haider, PhD; Kenneth W. Bayles, PhD

### Session I: Computer-Aided Cardiology

Moderator: Hamid Vakilzadian, PhD

- 8:15 a.m. Computer-Aided Cardiology  
Ward A. Chambers, MD
- 9:00 a.m. Heart Disease Image and AI  
Ayesha Azmeen, MBBS and Shine Bedi
- 9:45 a.m. Break / Networking

### Session II: Heart Sounds and AI

Moderator: Edward O'Leary, MD, MBA, MHCM

- 10:00 a.m. History of Heart Sounds and the Search for Patterns for Disease Diagnosis  
Daniel H. Mathers, MD
- 10:45 a.m. Machine Learning Models/Analysis for Heart Disease Detection  
Hamid Vakilzadian, PhD
- 11:30 a.m. Challenges of Integration of Automated Heart Sound Analysis Into a Health Care System Like Nebraska  
John R. Windle, MD
- 12:15 p.m. Break / Networking
- 12:30 p.m. Lunch and Speaker: National Science Foundation (NSF) Policy in AI and Its Applications in Cardiology/Health Sciences  
Wendy J. Nielsen, PhD

### Session III: Future Research Opportunities and Areas of Unmet Need

Moderator: Hani Haider, PhD

- 1:30 p.m. Funding Opportunities in Health Sciences and AI  
Edwin Lomotan, MD
- 2:15 p.m. Break / Networking
- 2:30 p.m. Funding Opportunities in Cardiology and AI  
Sylvia Spengler, PhD
- 3:15 p.m. Plenary Discussion
- 4:00 p.m. Break / Networking

### Session IV: State-of-the-Art AI Products

Moderator: Edward O'Leary, MD, MBA, MHCM

- 4:30 p.m. State of AI in Commercial Products\*
- 5:30 p.m. Closing Remarks
- 5:45 p.m. Adjourn

## WORKSHOP DIRECTORS

**Edward O'Leary, MD, MBA, MHCM**  
Associate Professor, Division of Cardiovascular Medicine; Associate Medical Director, Cardiovascular Catheterization Laboratory; Associate Program Director, Interventional Cardiology Fellows, UNMC

**Hamid Vakilzadian, PhD**  
Professor, Department of Electrical & Computer Engineering, College of Engineering, UNL

**Hani Haider, PhD**  
Professor; Director, Orthopaedic Biomechanics and Advanced Surgical Technologies Laboratory, Department of Orthopaedic Surgery and Rehabilitation, UNMC

## WORKSHOP FACULTY

**Ayesha Azmeen, MBBS**  
Third Year Fellow, Division of Cardiovascular Medicine, Department of Internal Medicine, UNMC

**Kenneth W. Bayles, PhD**  
Professor, Department of Pathology, Microbiology, and Immunology; Vice Chancellor for Research, UNMC

**Shine Bedi**  
Graduate Student, Computer Science, College of Engineering, UNL

**Ward A. Chambers, MD**  
Professor, Division of Cardiovascular Medicine, Department of Internal Medicine, UNMC

**M.R. Hasan, PhD**  
Assistant Professor, Department of Electrical and Computer Engineering, UNL

**Edwin Lomotan, MD**  
Deputy Director, Division of Digital Healthcare Research, Agency for Healthcare Research and Quality (AHRQ), Rockville, MD

**Daniel H. Mathers, MD**  
Professor, Division of Cardiovascular Medicine, Department of Internal Medicine, UNMC

**Wendy J. Nielsen, PhD**  
Deputy Division Director, Division of Information and Intelligent Systems (IIS), National Science Foundation (NSF), Alexandria, VA

**Sylvia Spengler, PhD**  
Program Director, Division of Information and Intelligent Systems (IIS), National Science Foundation (NSF), Alexandria, VA

**John R. Windle, MD**  
Holland Distinguished Chair in Cardiovascular Sciences; Professor, Division of Cardiovascular Medicine, Department of Internal Medicine, UNMC

\*No credit will be provided for this session.