UNIVERSITY OF NEBRASKA AT OMAHA

GREAT PLAINS IDeA | Clinical and Translational Research

University of Nebraska Medical Center

ML/AI Applications in Biology and Medicine

May 2nd, 2024 | 8:30 - 4:00 | DRC 1002, UNMC

Center for Biomedical Informatics Research & Innovation (CBIRI)

Meet, greet, and mingle with the ML/AI and Research Informatics Community and learn about the diverse research projects that span across ML/AI applications in biology and medicine. Find collaborators and synergistic research opportunities to build team science projects that encompass ML/AI research. This will be a hybrid - virtual (Zoom) / in-person event, however, in-person attendance is highly recommended to be able to participate in the poster session, lunch, and meet colleagues.

Webinar link via Zoom:
https://unmc.zoom.us/j/94305117305?pwd=YnFIZUVvR05sanpET0EzalM0RjV3UT09

AGENDA

8:30 a.m.	**COFFEE / REFRESHMENTS**
9:00 a.m.	**WELCOMING REMARKS** ▪ Howard Fox, MD, PhD – Sr. Associate Dean for Research & Development, College of Medicine, Professor, Department of Neurological Sciences, UNMC ▪ Sara Myers, PhD – Associate Vice Chancellor for Research & Creative Activity, Professor, Department of Biomechanics, UNO
9:10 a.m.	**MORNING SESSION** (30 minutes each) ▪ John Windle, MD – Founding Director of Center for Intelligent Health Care, Professor, Department of Internal Medicine, UNMC *Human in the Loop* ▪ Shibiao Wan, PhD – Assistant Professor, Genetics, Cell Biology, and Anatomy, UNMC *Artificial Intelligence for Omics-Based Biomedical Research* ▪ Pei-Chi (Peggy) Huang, PhD – Assistant Professor, College of IS&T, UNO *Bacterial Image Segmentation through Deep Learning Approach*
10:40 a.m.	**COFFEE BREAK**
11:00 a.m.	**KEYNOTE SPEAKER** Ramana Davuluri, PhD Professor, Department of Biomedical Informatics, Stony Brook Cancer Center, The State University of New York at Stony Brook *Artificial Intelligence in the Era of LLMs- Opportunities and Challenges in Biomedical Informatics*
12:00 p.m.	**LUNCH** (*Pizza lunch will be provided for all in-person participants*)
12:30 p.m.	**POSTER PRESENTATIONS**
1:30 p.m.	**WELCOMING REMARKS** ▪ Mathew Rizzo, MD, PI/Project Director, Great Plains IDeA-CTR, Professor, Department of Neurological Sciences, UNMC **AFTERNOON SESSION** (30 minutes each) ▪ Juan Cui, Ph.D. Associate Professor, Computer Science and Engineering, UNL *Advancing Cancer Diagnosis and Mechanistic Discovery through Machine Learning* ▪ Steven L Fernandes, Ph.D. Assistant Professor, Computer Science and Informatics, Creighton University *Deep Learning-Based Detection of Cochlear Hair Cells in the Presence of Adversarial Attacks* ▪ Jai Patel, PhD – Post-Doctoral Associate, Genetics, Cell Biology, & Anatomy, UNMC *GAIN-BRCA: A Graphical Explainable AI-net Framework for Breast Cancer Subtyping Using Multi-omics Data* ▪ Kirk Gasper, PhD Candidate, College of Information Science and Technology, UNO / University of Texas at Southwestern *A Novel Architectural Paradigm of Pancreatic Cancer Progression*
3:45 p.m.	**CLOSING REMARKS**

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KEYNOTE SPEAKER

Ramana Davuluri, PhD

Dr. Davuluri had his foundational training in Statistics and Computer Science and carried out research in Bioinformatics and Computational Genomics over the past 25 years. He is one of the first to apply the Bidirectional Encoder Representations from Transformers (BERT) to develop a large language model (LLM) for the human genome. This method, now popularly known as DNABERT, was first published in 2021. It can accurately identify patterns in non-coding DNA sequences directly from the final embedding of the sequence alone. It has been widely adopted for various applications, such as for predicting the non-coding variant effects on regulatory elements. In addition, Dr. Davuluri has developed dozens of highly popular bioinformatics methods in the genomic, epigenetic, and alternative splicing areas and published in high impact journals. He was trained at the Cold Springs Harbor Laboratories and before moving to Stonybrook, he served on the faculty at Northwestern, Wistar Institute, and Ohio State.

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