

Biomedical Informatics Grand Rounds

Wednesday, November 15, 2023

3:00 pm – 4:00 pm

Towards Human-Centered and Interpretable Machine Learning for Early Disease Prediction Using Electronic Health Records: Bridging the Gap Between AI Models and Clinical Decision-Makers



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Bio: Fusheng Wang: Dr. Wang is a Professor at the Department of Biomedical Informatics and Department of Computer Science at Stony Brook University. He received his Ph.D. in Computer Science from University of California, Los Angeles, and M.S. and B.S. in Engineering Physics from Tsinghua University. Prior to joining Stony Brook University, he was an assistant professor at Emory University. He was a research scientist at Siemens Corporate Research (Princeton, NJ) before joining Emory University. His research covers Data Management Systems, GIS, Medical Imaging Informatics, AI in Healthcare, Population Health and Opioid Epidemic Research, and Assistive Technologies.

Richard Rosenthal: Dr Rosenthal is a Professor at the Department of Psychiatry and Behavioral Health at Stony Brook University. He received his MD at SUNY Downstate Medical Center and completed his psychiatry residency as Chief Resident at Mount Sinai Hospital. Prior to joining Stony Brook University, he was a Professor at Mount Sinai and Medical Director of Addiction Psychiatry. He was Chair of Psychiatry at St. Luke's Roosevelt Hospital Center and was Arthur J. Antenucci Professor and Senior Associate Dean at Columbia University College of Physicians & Surgeons before joining Mount Sinai Health System. His research has focused on evaluating and treating mentally ill patients with addictive disorders and novel treatments for SUD, and since coming to Stony Brook, he has developed his interest in medical informatics and machine learning strategies regarding identification and impact of non-medical opioid use.

Abstract: Advanced machine learning models such as deep learning have shown significant promise in early disease risk prediction through electronic health records (EHR). However, a significant challenge remains in understanding these complex models, and building trust among critical stakeholders, including clinicians and patients, for the adoption of such tools. In this talk, we will present our perspective on bridging the gap between advanced AI models and practical clinical decision-making by not only building accurate models but also by explaining how they work, with iterative engagement of clinicians and patients in model development, optimization and interpretability.

Educational Objectives:

1. Understand predictive modeling for early disease risk prediction using electronic health records.
2. Recognize the major challenges of adoption of machine learning based tools in clinical practice.
3. Understand the need for human-centered explanations of AI models in healthcare.

Disclosure Statement: Dr. Wang is the CEO of EyeCanDo, Inc. Dr. Rosenthal and the planners have no relevant financial relationship with ineligible companies, whose primary business is producing, marketing, selling, reselling, or distributing health care products used by or on patients.

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