UTHealth
The University of Texas Health Science Center at Houston
School of Biomedical Informatics

DSICCR Tuesday Seminar Series

April 18th, 12pm-1pm, Webcast Click Here

Learning robust disease-disease multimorbidity relationships from large-scale EHRs

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Multifactorial and complex diseases are responsible for the majority of health burden. Population-wide data analysis of complex diseases, their relationships, comorbidity patterns, and genetic correlations using large-scale electronic health record (EHR) has emerged as a useful strategy to facilitate understanding of disease etiology and to build data-driven tools for assessing an individual's disease risk or suggesting optimal therapy. However, the complexity and noise in large-scale EHR data require robust analysis techniques to discover true disease patterns. In this study, we used multivariate statistics and network models to quantify diseasome-wide multimorbidities based on ICD codes and compare across different EHR systems. Our findings show high consistency of multimorbidity patterns between the two systems, and the ability to capture known causal factors and novel findings in multimorbidity patterns. We also propose interactive web applications to facilitate the discovery of complex data using EHR data. We will demonstrate using a case study the importance of cross-institution comparison and measurement in EHR-based research to promote personalized medicine.

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