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International Conference on HEALTHCARE AND MEDICAL INFORMATICS

August 02, 2021 | Webinar

Discover new knowledge of potential risks by strengthening the combination of Artificial Intelligence and Human Intelligence

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With the popularization of electronic medical record (EMR) system in modern health care, a large amount of electronic medical record data is becoming a rich resource for data mining to improve the quality of clinical care. Acute Kidney Injury (AKI) is a sudden episode of kidney dysfunction that develops rapidly over a few hours to a few days and is common in patients who are in the hospital, in intensive care units, and especially in older adults. Data mining and knowledge discovery techniques have the potential to play important roles in clinical decision support for healthcare professionals. In this study, we developed a novel knowledge discovery framework based on machine learning to mine interpretable risk knowledge for personalized medicine, and used acute kidney injury—a common and potentially life-threatening condition—as an exemplar. The study cohort included all adult patients who were hospitalized in a tertiary academic medical center for more than one day from November 2007 to December 2016, resulting in 179,370 encounters. Potential risk factors extracted from electronic medicine records for the cohort included demographics, vital signs, medications, laboratory values, past medical diagnoses, encounter comorbidities, and admission diagnoses. Our results show the effectiveness of the knowledge discovery framework from three perspectives of accuracy, stability and credibility. More importantly, the data driven knowledge discovery framework combines machine derived knowledge with human intelligence to enable potential discovery of new knowledge

Biography

Dr. Lijuan Wu is an assistant professor at the Jinan University, Guangzhou city, China. Her research interests include machine learning, data mining and artificial intelligence in healthcare. She has her expertise in data mining using electronic medical records and is passionate about improving health and well-being.

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