Fuchiang (Rich) Tsui, Adv Robot Autom 2018, Volume: 7
DOI: 10.4172/2168-9695-C1-013

Fuchiang (Rich) Tsui

Children's Hospital of Philadelphia, USA

Clinical predictive analytics for the reduction of morbidity, mortality, and costs in healthcare from large electronic health records and community data

Electronic health records (EHRs) have become ubiquitous in healthcare and are generated in large quantities and diverse content. With this explosion of such information in conjunction with community data and the advent of powerful artificial intelligent analyses, we are now in the perfect storm to improve healthcare by reducing morbidity, mortality and costs.This keynote talk will report several predictive modeling applications, development of natural language processing from deep neural networks, and recent field evaluation of a predictive model at the point-of-care in a large children's hospital. We have developed predictive modeling automatically learned from large structured and unstructured EHR data such as demographics, laboratory results, medications, and narrative clinical reports, in conjunction with community data such as birth and death records. We applied the models to risk identification of infant mortality, morbidity in pediatric intensive care, 30-day hospital readmissions, and suicide attempts. In addition, we have developed deep neural networks for identification of social context from narrative clinical reports. Social context has demonstrated to be one of critical factors impacting healthcare outcomes. Most importantly, very few predictive modeling has demonstrated its effectiveness in real-time clinical practice. We demonstrated up to 43% of readmission reduction in two months of pilot study within a large children's hospital by combining risk prediction and hospital intervention.

Biography

Dr. Tsui is a scientist holding the Endowed Chair in Biomedical Informatics and Entrepreneurial Science at the Children's Hospital of Philadelphia, an adjunct associate professor at the University of Pittsburgh, and the director of Tsui Laboratory. He received his Ph.D. in Electrical Engineering, premed training, and postdoctoral training in biomedical informatics at the University of Pittsburgh. He has published more than 100 peer-reviewed papers and has been working in healthcare analytics for more than 20 years. Dr. Tsui's research interest includes Clinical informatics, population informatics, machine learning, data mining, natural language processing, mobile healthcare, data warehouse, and large real-time production systems

TSUIF@email.chop.edu