

Precision Medicine: Applying analytics at the bedside through real-time complex event stream processing of heterogeneous sensor networks

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Abstract:

Critically ill patients are admitted to the intensive care unit (ICU) for complex, time sensitive, and dynamic care. While traditional patient monitors in the ICU have been used to generate large volumes of continuous physiological data from sensors attached the patient, analytics applied to those systems have largely been univariate and limited. Use of big data approaches, such as continuous and longitudinal event stream analytics through open source software such as Apache Spark allows us to analyze multiple channels of physiological data for prediction of potentially devastating conditions prior to their clinical manifestation. The use of novel discretization and machine learning methods allow us to identify salient ‘physiomarkers’, such as reduced heart rate variability or arrhythmias. This presentation will highlight recent work and new directions we are progressing at the Pediatric Intensive Care Unit at Le Bonheur Children’s Hospital.

About the Speaker:

Dr. Rishi Kamaleswaran is an Assistant Professor at the Center for Biomedical Informatics and Division of Critical Care Medicine at the University of Tennessee Health Science Center. He earned his Ph.D. in Computer Science from the University of Ontario Institute of Technology in Canada. His research interests include real-time sensor data analytics at the bed-side to identify the onset of abnormal conditions. His contribution includes: real-time event stream processing, data analysis, data visualization and information systems design.

Reception in Dunn Hall 336 - 1:30pm