JOINT BIOENGINEERING SEMINAR SERIES

"Predictive Analytics and an Application in Predicting Survivability across Different Cancer Types"

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Abstract:

In this talk I will first give a brief introduction to the booming area of predictive analytics and how machine learning methods are used for making predictions. Then I will talk about our recent work on predicting cancer survivability using machine learning methods and a publicly available dataset. Although researchers in past had used a wide variety of machine learning methods for building cancer survivability prediction models, they did not distinguish between various stages of cancer either during training the models or while evaluating them. For each of ten common cancer types we built survivability prediction models trained on each stage separately and compared their performance with the traditional models trained on all stages together. Our results show that for most cancer types, the most suitable model to predict survivability for a specific stage of the cancer is the model trained for that particular stage. We also show that evaluating predictive models for survivability on all the stages together, as was done in the past, is misleading because it overestimates performance. This was found to be true across all ten cancer types.

Bio:

Rohit Kate is an Associate Professor in the Department of Health Informatics and Administration at the University of Wisconsin-Milwaukee. He also has adjunct appointments in the Department of Computer Science at UWM and in the Clinical and Translational Science Institute at Medical College of Wisconsin. He received his Ph.D. and M.S. in Computer Science from the University of Texas at Austin and B.Tech. in Computer Science and Engineering from Indian Institute of Technology, Delhi. His research focus is on applying machine learning techniques to do predictive analytics for medical applications. Most recently he has worked on predicting cancer survivability and predicting acute kidney injury using machine learning models. He has also worked on predicting physical activity and energy from time series data obtained using wearable accelerometers. His research interest is also in applying natural language processing techniques to automate analysis of biomedical and clinical text. In this area, his recent focus has been on leveraging available biomedical knowledge resources to improve techniques for extracting computer-processable knowledge from clinical text.