Assessment of Simultaneous Failure Risks On Survival Genomic Data: Using Deep Neural Network

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ABSTRACT

The remarkable high-dimension medical data resulting from clinicians and data scientists call for advanced analytics methods and learning techniques to extract knowledge that are very important to all clinicians, scientists, and health policy makers. In this regard, this study ought to apply Deep Neural Networks (DNNs) and Artificial Neural Networks (ANNs) to micro-array survival genomic problems by examine the effect of the failure rates simultaneously. The models were builds together with the common survival methods and we observed that DNN model outperforms ANN model due to high-dimension of the used real-life data. Finally, this study further investigates important genes among the gene's expression using the variable important method and our techniques identifies the most prominent genes that influence the survival of patients from the chronic diseases under consideration.

Key word: High-dimension data, Deep Neural Networks (DNNs), Artificial Neural Networks (ANNs), Variable important.