Abstract

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Detecting Acute Lymphoblastic Leukemia in Down Syndrome Patients using Convolutional Neural Networks on Preprocessed Mutated Datasets

Convolutional neural networks extract high-level abstraction features using minimum preprocessing steps. In this research, we propose a new approach in classifying Down Syndrome with Acute Lymphoblastic Leukemia using a convolutional neural network. Sequences are represented using a one hot vector depending on point mutation as input to the CNN model. Therefore, it conserves the necessary position data of each nucleotide in the sequence. Using two different genomic data-sets, our proposed model has achieved significant improvements over classical classification techniques, with an increased accuracy of 98%, and 98.5%, respectively.