

Intelligent mining of large-scale bio-data: bioinformatics applications

ABSTRACT

Today, there is a collection of a tremendous amount of bio-data because of the computerized applications worldwide. Therefore, scholars have been encouraged to develop effective methods to extract the hidden knowledge in these data. Consequently, a challenging and valuable area for research in artificial intelligence has been created. Bioinformatics creates heuristic approaches and complex algorithms using artificial intelligence and information technology in order to solve biological problems. Intelligent implication of the data can accelerate biological knowledge discovery. Data mining, as biology intelligence, attempts to find reliable, new, useful and meaningful patterns in huge amounts of data. Hence, there is a high potential to raise the interaction between artificial intelligence and bio-data mining. The present paper argues how artificial intelligence can assist bio-data analysis and gives an up-to-date review of different applications of bio-data mining. It also highlights some future perspectives of data mining in bioinformatics that can inspire further developments of data mining instruments. Important and new techniques are critically discussed for intelligent knowledge discovery of different types of row datasets with applicable examples in human, plant and animal sciences. Finally, a broad perception of this hot topic in data science is given.

Keyword: Bioinformatics; Data mining; Artificial intelligence; Intelligent knowledge discovery; Bio-data analysis; Heuristic algorithms