

RECENT TRENDS IN BIOINFORMATICS

Dr. C.K.Gomathy, Assistant Professor, SCSVMV Deemed to be University, India
Ms. N.Sri Hasitha, Ms.T. Lalitha Sagari, Ms.S.Srilalitha, Ms.T. Sushma Naidu
UG Scholars- SCSVMV Deemed to be University, India.

ABSTRACT

The development of biotechnology has accelerated, especially during the past ten years, as a result of the massive amounts of data generated by the sequencing of genomes and the solution of crystal structures. Future possibilities are given along with a description of bioinformatics education in India. In order to serve the scientific community, the Indian government made a concerted effort to build India's bioinformatics infrastructure in the 1980s. The necessity for skilled people with knowledge of information technology and biotechnology was reinforced by developments in the field of bioinformatics.

Keywords: Bioinformatics, genomes, biological data.

I. INTRODUCTION

The intersection of the biological and computational sciences is called bioinformatics, which uses methods and ideas from applied mathematics, informatics, statistics, chemistry, biochemistry, physics, linguistics, and computer science to tackle biological problems. The origins of bioinformatics in India may be traced back to the 1960s, when Prof. G. N. Ramachandran and his colleagues created the renowned Ramachandran plot, which served as the basis for contemporary structural biology and bioinformatics. The field of bioinformatics focuses on the creation of methods and tools for gathering, organizing, storing, retrieving, visualizing, and analyzing biological data. The techniques used in bioinformatics are used to extract insightful information from the data produced in the various biological science study domains.

The current system was so extensive that it might fill massive volumes with countless pages, and reading it would take a very long time. The amount of material that was made available by the Human Genome Project was so large that it would take 26 years of nonstop effort to read all of it if it were collected into books.

There were 200 volumes, each with 1000 pages. Comparing DNA sequences is one of the intriguing jobs that bioinformatics makes possible, and it also produces findings that could be significant and useful for industry. Bioinformatics techniques were used to research genome sequencing. In both graphical and text-based genomic mapping, bioinformatics combines genetic data with past, present, and future experimental findings.

II. METHODOLOGY

There has been a thorough analysis of the bioinformatics data that has been published in Web of Science. The Web of Science (WoS) database's generic search options should be used to gather the fundamental information pertaining to bioinformatics papers from India. Weekly updates are made to WoS, an interdisciplinary bibliographic database. The WoS contains 9000 websites, 23,000,000 patents, 23,000 academic and scientific periodicals, and 110,000 conference papers. WoS searches are available for papers, reports, books, and book reviews and can be done by author, institution, keyword, or location. It is referred to as a unified research tool that allows the user to quickly gather, analyze, and publish database information. Based on Web of Science, a five-year scientometric analysis of bioinformatics research was conducted between 2006 and 2010. All of the search results must first be stored in text files before being imported into Microsoft Excel and used for analysis. The study was conducted using bioinformatics-related data that was published in Web of Science.

III. IMPLEMENTATION

The Department of Biotechnology (DBT), Government of India, established a nationwide network of Distributed Information Centers (DICs) under the auspices of the Biotechnology Information System (BTIS), which marked the beginning of the formalization of bioinformatics activities in that country in the early 1980s. The task of conducting specialized research and offering assistance and services in bioinformatics to the entire scientific community has been delegated to these centers. The development and implementation of bioinformatics research in India was limited to a number of organizations, the appearance of which sparked a broad-scale expansion in the subject. The field's ultimate objective is to facilitate the discovery of novel biological insights and to develop a broad viewpoint from which unifying biological principles can be deduced.

IV. RESULTS

A novel, effective fusion of computer science and molecular biology, bioinformatics is a young, emerging science in many nations. In this sector, software is used to display and interpret biological data such as DNA, RNA, and numerous other genomic sequences. Additionally, the data acquired through this study could be applied to many fields, including drug production, gene therapy, gene testing, and diagnostics. In a rising nation like India, bioinformatics is crucial in industries like the pharmaceutical and agricultural sectors, among others. It can be used to shorten the time and expense associated with the drug discovery process.

V. CONCLUSION

India took the first efforts to create the necessary infrastructure and launch training programmes in bioinformatics after realizing the promise of this field. The country has seen a perceptible increase in biotechnology and bioinformatics as a result of efforts in this regard. The development of bioinformatics resources and publications in international journals with high impact factors are the results of several research projects that were financed and successfully completed. In the biotechnology and software industries, bioinformaticians in key positions have made major contributions to the value chain that produces both intellectual property rights and money. India is positioned to play a bigger role in the future thanks to its strengths in information technology, rising investments in bioinformatics infrastructure, and the growth of its human resources. In the coming years, it is anticipated that the Indian bioinformatics market will expand rapidly and capture a sizable portion of the worldwide bioinformatics market.

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