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Survey of cloud computing in bioinformatics

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This survey of cloud computing tools in Bioinformatics is a study of tools, algorithms and current projects in the field of Bioinformatics, that leverage the power of cloud computing. Cloud service providers including Amazon web services, Penguin On Demand, and Microsoft Azure are considered, to study the various bioinformatics tools and datasets they host. This study also involves testing of some bioinformatics programs and documenting the performance and benefits of running large datasets on the cloud. The tools studied as part of this survey aim to benefit any firm in the field of Bioinformatics that wants to run its programs on a cloud. Bioinformatics is a field that requires large amounts of computational power to conduct research and experiments, and can benefit significantly from the services provided by cloud computing. This survey analyzes bioinformatics tools such as CloudBlast, CloudBurst, Cloud Aligner and many more. Many useful public data sets in Bioinformatics that are available in cloud environments include Ensembl, Annotated Human Genome Data, 1000 Genomes project, Model Organism Encyclopedia of DNA Elements, Denisova Genomes, Genbank, etc. The database and storage capacities offered by different service providers vary greatly. Another interesting feature is the use of frameworks like Hadoop in Bioinformatics. Leveraging these tools and cloud providers, bioinformatics firms can gain access to the latest technologies and achieve significant cost benefits.

This survey was done as a semester project for the Graduate course on Bioinformatics and Data Mining research under the guidance of Dr. Elise de Doncker, Professor, Department of Computer Science, Western Michigan University, USA.

Biography

Savitha Parur Venkitachalam is a Graduate Student in Computer Science at Western Michigan University, Kalamazoo, Michigan. She completed her Bachelor's Degree in Electronics & Communication Engineering from Avinashilingam Deemed University, India. Savitha's professional experience includes 2.5 years as a Software Engineer and Project Lead at UST Global in India, and a Graduate internship at Whirlpool Corporation.

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