



## Web Mining

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**Web Mining** is the process of Data Mining techniques to automatically discover and extract information from Web documents and services.

The main purpose of web mining is discovering useful information from the World-Wide Web and its usage patterns. **Applications of Web Mining:**

1. Web mining helps to improve the power of web search engine by classifying the web documents and identifying the web pages.
2. It is used for Web Searching e.g., Google, Yahoo etc and Vertical Searching e.g., FatLens, Become etc.
3. Web mining is used to predict user behavior.
4. Web mining is very useful of a particular Website and e-service e.g., landing page optimization.

Web mining can be broadly divided into three different types of techniques of mining: Web Content Mining, Web Structure Mining, and Web Usage Mining. These are explained as following below.


1. **Web Content Mining:** Web content mining is the application of extracting useful information from the content of the web documents. Web content consist of several types of data – text, image, audio, video etc. Content data is the group of facts that a web page is designed. It can provide effective and interesting

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scanning and mining of the text, images and groups of web pages according to the content of the input.

2. **Web Structure Mining:** Web structure mining is the application of discovering structure information from the web. The structure of the web graph consists of web pages as nodes, and hyperlinks as edges connecting related pages. Structure mining basically shows the structured summary of a particular website. It identifies relationship between web pages linked by information or direct link connection. To determine the connection between two commercial websites, Web structure mining can be very useful.
3. **Web Usage Mining:** Web usage mining is the application of identifying or discovering interesting usage patterns from large data sets. And these patterns enable you to understand the user behaviors or something like that. In web usage mining, user access data on the web and collect data in form of logs. So, Web usage mining is also called log mining.



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### Comparison Between Data mining and Web mining:

Points

Data Mining

Web Mining

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Points	Data Mining	Web Mining
	knowledge in large data sets in any system.	extract information from web documents.
Application	Data Mining is very useful for web page analysis.	Web Mining is very useful for a particular website and e-service.
Target Users	Data scientist and data engineers.	Data scientists along with data analysts.
Access	<u>Data Mining access data privately.</u>	<u>Web Mining access data publicly.</u>
Structure	In Data Mining get the information from explicit structure.	In Web Mining get the information from structured, unstructured and semi-structured web pages.
Problem Type	Clustering, classification, regression, prediction, optimization and control.	Web content mining, Web structure mining.
Tools	It includes tools like machine learning algorithms.	Special tools for web mining are Scrapy, PageRank and Apache logs.
Skills	It includes approaches for data cleansing, machine learning algorithms. Statistics and probability.	It includes application level knowledge, data engineering with mathematical modules like statistics and probability.

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# What are the types of Web Mining?

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Web mining defines the process of using data mining techniques to extract beneficial patterns trends and data generally with the help of the web by dealing with it from web-based records and services, server logs, and hyperlinks. The main goal of web mining is to find the designs in web data by collecting and analyzing data to get important insights.

Web mining can widely be viewed as the application of adapted data mining methods to the web, whereas data mining is represented as the application of the algorithm to find patterns on mostly structured data fixed into a knowledge discovery process.

Web mining has a distinctive property to support a collection of multiple data types. The web has several aspects that yield multiple approaches for the mining process, such as web pages including text, web pages are connected via hyperlinks, and user activity can be monitored via web server logs.

There are various types of web mining which are as follows –

**Web Content Mining** – Web content mining is a procedure of Web Mining in which essential descriptive data is extracted from websites (WWW). Content involves audio, video, text documents, hyperlinks, and structured records. Web contents are designed to deliver records to users in the design of text, lists, images, videos, and tables.

The function of content mining is data extraction, where structured data is copied from unstructured websites. The goal is to support data aggregation over several websites by utilizing the extracted structured data.

**Web Structured Mining** – Web Structure mining is one of the core techniques of web mining that deals with hyperlinks structure. Structure mining essentially shows the structured summary of the website. It recognizes relationships among linked web pages of websites.

Web mining is only data mining that digs information from the web. There are several algorithmic techniques are used to find data from the web. Structure mining analyzes hyperlinks of the website to assemble informative records and sort them out in elements like similarities and relationships. Intra-page is a type of mining that is implemented at the document level and hyperlink level mining is called inter-page mining.

**Web Usage Mining** – Web usage mining is used to extract useful records, information, knowledge from the weblog data, and helps in identifying the user access patterns for web pages.

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In Mining, the usage of web resource

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thinking about records of requests of

visitors of a website that are often collected as web server logs. While the content and architecture of the set of web pages follow the intentions of the authors of the pages, the single requests show how the users view these pages. Web usage mining may disclose relationships that were not proposed by the creator of the pages.

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