



Lead Role Of Graph Theory In Social Media Marketing

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Abstract

The mathematical field of graph theory examines the relationships between items represented by nodes and edges. Graph theory is used in social network analysis to describe and analyze social structures using graphs that reflect people and their relationships on social media sites like Face book and Twitter. The use of graph theory to social network analysis includes a number of components, such as determining communities, assessing centrality, identifying influence, and examining the spread of information. The application of graph theory to social media marketing will be examined in this essay.

Key words

Graph, Social media, marketing

Introduction

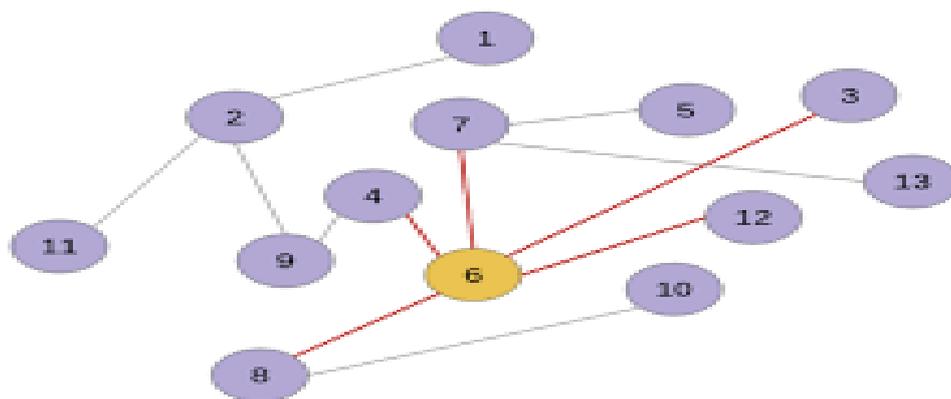
Social networks now play a crucial role in how people interact, exchange information, and build relationships in today's world. It is essential to comprehend the fundamental dynamics and architecture of these networks for a number of applications, such as behaviour prediction, community administration, and marketing. With its focus on networks and their characteristics, graph theory provides an effective set of tools for social network analysis. Fundamentally, graph theory views social networks as mathematical structures made up of edges, which stand for connections or interactions, and nodes, which represent individuals. A variety of graph theoretic ideas and methods can be applied with this representation in order to identify trends, gauge influence, and forecast behaviour in these networks.

A collection of distinct items made up of vertices joined by lines or edges is called a graph. Graphs, which represent distinct items and the relationships between them, are widely used to model problems in a variety of applications. Using items as points, circles, or nodes and the connections between them as lines, a graph can be visually represented (Diestel, 2017).

Graph Theory

Definition:- The study of points and lines is known as graph theory. It is a branch of mathematics that focuses on graph analysis. The mathematical truth is represented by this visual representation. The study of the connections between vertices (nodes) and edges (lines) is known as graph theory.

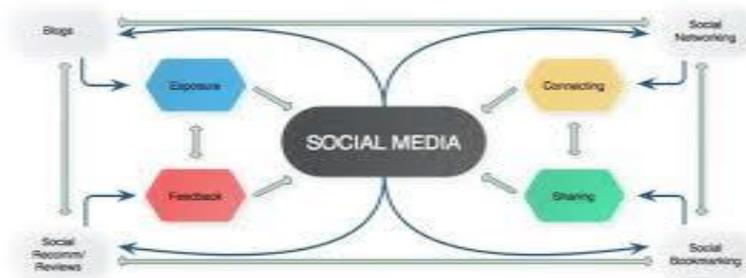
In discrete mathematics, graph theory is the study of graphs. A mathematical structure that connects a collection of points to express a specific function is called a graph. It is employed to establish an object-to-object pair wise relationship. The edges (lines) connect the vertices (nodes) that make up the graph. In addition to mathematics, the linear graph finds usage in computer science, physics, chemistry, linguistics, biology, and other disciplines. GPS, which allows you to monitor a path or determine the direction of a road, is also the best illustration of graph structure in real life.



This method is particularly useful for computer processing of molecular structures, from database searching to chemical editing. Graphs can depict the dynamics of a physical process on a system or the local relationships between interacting components of a system in statistical physics.

Application of Graph Theory in social networks:

An essential tool for examining and comprehending social networks is graph theory. Here are a few important uses: Networks of Friends and Affiliations: According to graph theory, a "friendship and affiliation network" is a particular kind of social network graph in which nodes (vertices) stand in for people and edges (links) for the connections between them. The Network influence Km algorithm, which gradually chooses nodes that offer the greatest rise in the spread of influence, may show two main kinds of linkages.



Optimization Problems: Maximizing the expected spread of influence is the aim of influence maximization, which may be expressed as an optimization problem. Due to their computational complexity, combinatorial optimization problems might be handled through the use of heuristics or approximation techniques.

Structure Analysis: Potential influencers can be found with the aid of graph-theoretic metrics like centrality (e.g., degree centrality, between's centrality). High centrality nodes are frequently excellent choices for optimizing influence.

Community Detection: Targeting influencers within particular subgroups to increase influence can be facilitated by identifying communities or clusters within the network.

Link Prediction: Estimating the probability of a future or absent connection between two nodes in a network is known as link prediction in graph theory. It is frequently utilized in biological networks, social networks, and recommendation systems.

CONCLUSION

Especially when it comes to social network analysis, graphs are easier to model and examine. In this talk, social networks—which have many uses—are analyzed using graphs as a tool. Searching, adding new members, and then computing and evaluating standards are the first steps. Recent advances demonstrate the extensive use of graph theory in social network analysis. Along with other kinds of analysis, this one can establish how important a person is in relation to others. Facebook and other well-known social media sites also employ this idea. Individual relationships are made simpler and more structured through the use of graph theory.

The "People You May Know" feature is one instance of how it is used; it may be achieved using graph search theory and techniques like Depth Limited Search (DLS). A number of hypotheses on graph development and its uses in social networks are reviewed in this paper. But there are a lot more applications for graphs that can be created. At the very least, this brief example demonstrates the simplicity and advantages of using graphs. In daily life

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