Abstract

Security of a network is important to all organizations, personal computer users, and the military. With the invention of the Internet, major concern is about the security and the history of security allows a better understanding of the emergence of security technology. One of the ways to secure businesses from the Internet is through firewalls and encryption mechanisms. A network can be designed as a sigraph S where every sigraph will have its unique adjacency matrix associated with it. A signed graph (or sigraph in short) S is a graph G in which every edge x carries a value \( s(x) \in \{-1, +1\} \) called its sign denoted specially as \( S = (G, s) \). Given a sigraph \( S \), \( H = L(S) \) called the line sigraph of \( S \) is that sigraph in which edges of \( S \) are represented as vertices, two of these vertices are adjacent whenever the corresponding edges in \( S \) have a vertex in common and any such edge ef is defined to be negative whenever both e and f are negative edges in \( S \). Here \( S \) is called root sigraph of \( H \). In this paper first we give an algorithm to obtain a line sigraph [1] and line root sigraph from a given sigraph [1], if it exists. This algorithm is an extension of an algorithm given by Lehot [2] in the realm of sigraphs. In the end we will propose a technique that will use adjacency matrix of \( S \) as a parameter to encrypt
and forward the data in the form of adjacency matrix of L(S) and will decrypt it by applying
inverse matrix operations.

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Index Terms

Computer Science Applied Mathematics

Keywords

Algorithm, sigraph, line sigraph, root sigraph, sign-compatible, network, network security,
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