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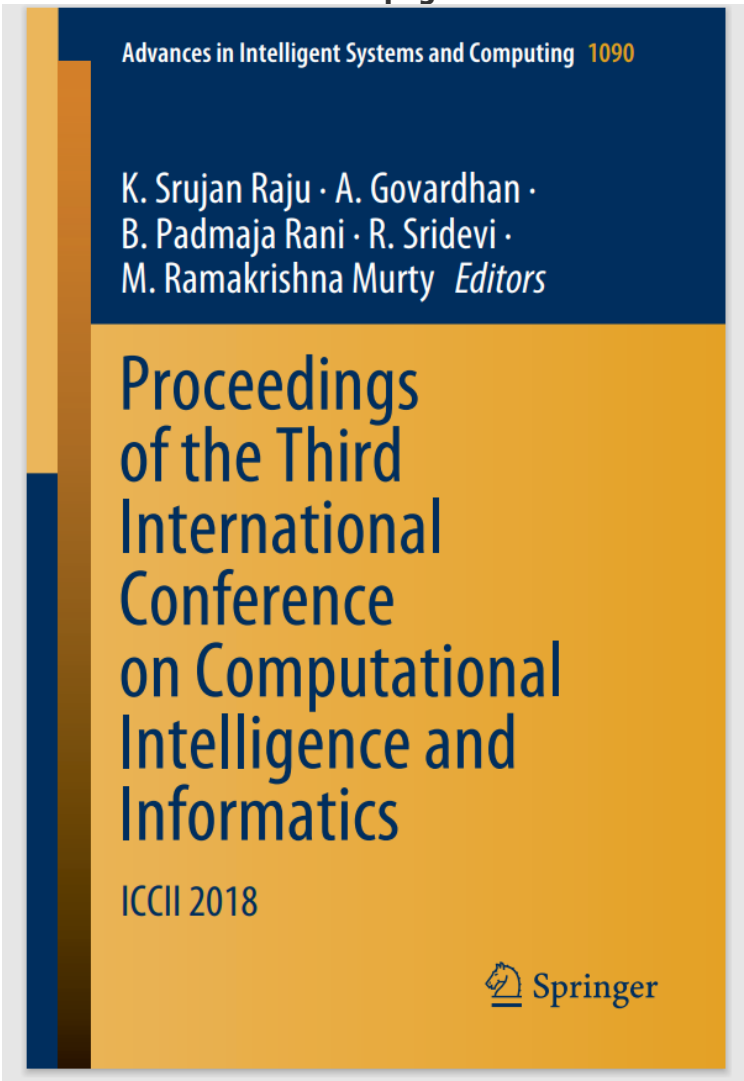
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ENGINEERING PHYSICS AND MATHEMATICS

IP Traceback through modified Probabilistic Packet Marking algorithm using Chinese Remainder Theorem

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Abstract Probabilistic Packet Marking algorithm suggests a methodology to identify all the participated routers of the attack path by probabilistically marking the packets. In this approach, these marked packets contain partial information regarding the routers of the attack path. At receiver, to get the complete information of every router, it requires more number of marked packets and hence more combinations and more fake positives. To overcome this drawback we have presented a novel idea in finding the exact IP address of the routers in the attack path by applying Chinese Remainder Theorem. The result of our implementation reveals that our idea requires less number of marked packets and takes no time in constructing the attack path. The same idea is true even in the case of multiple attackers.

1. Introduction

Information transfer became very easy due to the invention of Internet. The speed of transmission has been tremendously increased and along with this, the attack rate has also grown exponentially. An "attack" is defined as a method of creating obstruction during the transmission of information. Due to the attacks all authorized persons are unable to retrieve the information while unauthorized people are successful in getting the information.

These attacks are broadly categorized as passive and active attacks. Generally passive attacks are difficult to detect but to some extent easy to prevent. Active attacks are difficult to prevent and simple to detect. In the active attacks, one of the most upsetting and very difficult task is to trace the adversary, called DOS attack, in which the legitimate people are unable to access the information. This is due to the intense logging of redundant packets sent by the attacker. This problem can be solved by finding the IP address of the attacker, but the IP

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