

Accepted Manuscript

Cellular Automata-based Improved Ant Colony-based Optimization
Algorithm for mitigating DDoS attacks in VANETs

K. DeepaThilak, A. Amuthan



PII: S0167-739X(17)32215-X
DOI: <https://doi.org/10.1016/j.future.2017.11.043>
Reference: FUTURE 3835

To appear in: *Future Generation Computer Systems*

Received date: 29 September 2017
Revised date: 15 November 2017
Accepted date: 26 November 2017

Please cite this article as: K. DeepaThilak, A. Amuthan, Cellular Automata-based Improved Ant Colony-based Optimization Algorithm for mitigating DDoS attacks in VANETs, *Future Generation Computer Systems* (2017), <https://doi.org/10.1016/j.future.2017.11.043>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Cellular Automata-based Improved Ant Colony-based Optimization Algorithm for mitigating DDoS attacks in VANETs

K. DeepaThilak^{#1} and A. Amuthan^{#2}

^{#1}Research Scholar, Pondicherry Engineering College, Department of CSE, Puducherry, India.
amuthan@pec.edu

^{#2}Professor, Pondicherry Engineering College, Department of CSE, Puducherry, India.
kdeepafeb@gmail.com

ABSTRACT

In Vehicular Ad hoc NETWORKS (VANETs), reliable data dissemination between vehicular nodes necessitate maximum degree of collaboration as they play a significant role for ensuring the core objective of communication. But the malicious action of vehicular nodes may disrupt the established degree of co-operation as they lead to poor performance inspite of high resource utilization. The malicious activity of vehicular nodes like DDoS attack must be detected and resolved in a potential way by identifying optimal nodes and optimal paths using cellular automata that modifies the search ability in a global way for increasing the speed of convergence. To prevent the search from falling into local optimum point and to enhance the convergence speed, global searching potential, an enhanced version of ant colony optimization (ACO) algorithm called Cellular Automata-based Improved Ant Colony-based Optimization Algorithm (CA-IACOA) is propounded. In CA-IACOA, the update rules and dynamic adaptive adjustment technique in pheromones of the traditional ACO is enhanced to a significant level based three threshold level of tolerance. This enhancement in the adopted pheromone is mainly for attaining better quality solution through reliable and dynamic increment of pheromone that considers the past history related to the visited paths of the ant agents. Further significant tradeoff that exists between solving quality and solving efficiency is resolved using updated dynamic evaporation factor strategy that aids in rapid convergence. Furthermore, trusted boundary symmetric mutation strategy is incorporated in CA-IACOA for improving mutation and to strengthen mutation efficiency. The simulation experiments of CA-IACOA infers that they are potential in handling DDoS attacks as they obtain quality solutions in identifying optimal nodes and optimal paths for reliable routing.

Download English Version:

<https://daneshyari.com/en/article/6873208>

Download Persian Version:

<https://daneshyari.com/article/6873208>

[Daneshyari.com](https://daneshyari.com)