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TOPIC

**Genetic Algorithm Applied To Multicast Routing Problem
In Ad Hoc Networks**

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Introduction general

In recent years, the field of telecommunication has taken a new level thanks to the evolution of wireless technologies and the emergence of mobile calculations units. The mobile units all possessing different characteristics (independence, capacity of storage, calculation speed ...) hence accedent to networks through a wireless communication interface. Wireless technology offers great flexibility employment and implementation of network cabling units which would be too costly to achieve in their totality or even impossible. Among characteristics of these new networks, we can cite the communicating architecture that in wireless, the spontaneity of their establishment, their auto-configuration, their mobility, their energy consumption, which Dolt be contreled, and the possibility of supporting a large number of users. Wireless networks fall into two types of architectures. Architectures with infrastructure or access point and architectures without infrastructure. In networks with access point, otherwise known networks with infrastructure, mobile units connect to a base station, which shares the available bandwidth, a mobile unit can communicate with other units through the base station to which it is directly attached. Each base station owns a cell in which mobile units can emit and receive packets. The second architecture of wireless networks is no infrastructure (without base station). We describe, in more details, later in this chapter ad hoc networks, the problematic routing, and we end our contributions to the field.

In all of this it must be taken along with the routing multicast of paramount importance. It is different from the normal routing networks as mentioned above. So existed several protocols to solve this problem, and also been several algorithms. Despite this and a These protocols including convergence time and of which the saturation occurs in the network of this, this area is still open to search algorithms and make more efficient and flexible protcoles. In this work we propose a genetic algorithm to find a solution for the multicast routing problem. Because genetic algorithms have the ability to give very adequate solutions to complex problems, although it does not give a perfect solution, but this was inadequate .

Conclusion General

the ad hoc network seem to have a good future in the coming years because it allows presence information in a manner distributed. However, the problem of multicast routing in Ad Hoc has a decisive impact on its future; transmission of data transfer needs well, from rapidity and the efficiency and quality .

one aspect is critical and significant is communication between nodes and transmission with performente way and especially the most optimals routes possible to destinations.

In this work, we present the multiple routing protocol in ad hoc networks and their difficulties, and also the challenges that we face, and caractrestics defferent them from each one of these types of routing protocol, we also present a genetic algorithm to solve the problem of multicast routing, we tried to developpe her for getting best results .

our works and auction more better by Useful routing protocol the algorithm genetic, focuses us to find them more optimle roads chque noueds to their destinations by taking the distance like a constraint, and the mobility of these noueds (dynamic topology) that routing type is multicast routing.

beaucoup des gens sont fait des etudes sur les routage dans les resaux ad hoc , et ils ont propose plusieurs solution a ce probleme , et nous propose l'algorithme genetique qui nous donne des resultat plus efficace.

for this thesis we interested routing rating in ad hoc, more specifically to multicast routing as it is the most complicated if compare it with the unicast routing and multicast routing.

We have also made changes on the genetic algorithm to give us good Results, prescisment has the initial population by doing this we propose a solution for noueud can communicate faster and takes them a more complete vision vision topology their networks with minimum cost.

to implement this project we use language java in.netbeans iditeur because it has a powerful and flexible platform makes its easier.

in the realization of this project we learn many things like wireless networks and these caracterstics, and we enter to the research field and also learned several methodes for howgetting

informations, also we read articles and books of the great scientist, in practical dimension we understand more java object oriented and how to program and implemente these problems that in study by the people who interested in research.

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ملخص:

عرضنا في عملنا هذا الشبكات أ د هوك اللاسلكية تاريخها و استخداماتها , مع التركيز على جانب التوجيه فيها وخاصة . كما عرضنا بروتوكولات التوجيه و أنواعها , مزاياها و التحديات التي تواجهها multicast

قمنا في هذه المذكرة باقتراح الخوارزمية الجينية كحل لمشكل التوجيه في هذا النوع من الشبكات محاولين تحسين قدر الامكان طريقة الحصول على الطريق الامثل لكل عقدة باتجاه وجهاتها وهذا يحسن أداء و فاعلية بروتوكول التوجيه , كما قمنا أيضا بتحسين الخوارزمية الجينية في حد ذاتها للحصول على نتائج افضل , و عمل مقارنة بينها وبين الخوارزمية الجينية العادية . على عملهما على هذا المشكل

كلمات مفتاحية: أ د هوك , التوجيه , بروتوكول توجيه , الخوارزمية الجينية .

Abstract :

We put our work in this wireless networking Ad hoc its history and uses, with a focus on the side of the guidance, especially as our offer multicast routing protocols and types, their advantages and which faced challenges.

We have in this note a genetic algorithm to propose a solution to the problem of guidance in this type of networks, trying to improve as much as possible way to obtain the optimal path for each node toward their destinations and this improves the performance and effectiveness of the routing protocol, and we are also improving the genetic algorithm in itself to get the best results, and a comparison between them and normal genetic algorithm their work on this problem.

Keywords: Ad hoc, routing, routing protocol, genetic algorithm.

résumé :

Nous mettons notre travail dans ce réseau sans fil Ad son histoire et utilisations hoc, avec un accent sur le côté de la direction, d'autant plus que nos protocoles de routage multicast offre et types, leurs avantages et qui faisait face à des défis.

Nous avons dans cette note un algorithme génétique de proposer une solution au problème de l'orientation dans ce type de réseaux, en essayant d'améliorer autant que les moyens possibles pour obtenir le chemin optimal pour chaque nœud vers leurs destinations, ce qui améliore les performances et l'efficacité des le protocole de routage, et nous sommes également à améliorer l'algorithme génétique en soi pour obtenir les meilleurs résultats, et une comparaison entre eux et le travail de algorithme génétique normale sur ce problème.

Mots-clés: ad hoc, le routage, le protocole de routage, algorithme génétique.