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قسم هندسة وعلوم الحاسبات

صاحب فكرة البحث: د. أيمن السيد احمد السيد عميرة

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1	A Method of Intelligent Technique in Searching Networks	د./ أشيت كومار دوتا	ابريل 2011
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البحث رقم (1)

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Title

A Method of Intelligent Technique in Searching Networks

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Abstract:

The concept of Intuitionstic Fuzzy sets (IFS), which is generation of the concept of a Fuzzy Set, has been introduced by k. Atanassov. In this paper, a new method of search using the intuitionistic fuzzy theory of Atanassov is proposed. In the proposed method, there is a new proposed algorithm that have been implemented, tested, and compared with others algorithms; the analysis and simulation results showed that Intuitionstic Fuzzy Underestimated "Branch and Bound" search techniques have achieved better efficiency, time complexity, and effective branching factor comparing (b*) with other searching techniques.

Keywords:

Intuitionistic fuzzy set, TFN, uft .

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عنوان البحث:

عربى : **طريقة لتقنية ذكية للبحث فى الشبكات**

انجليزي: **A Method of Intelligent Technique in Searching Networks**

صاحب فكرة البحث : **أيمن السيد احمد السيد عميرة**

المشاركين فى البحث: أشيت كومار دوتا

طريقة البحث:

وقد تم إدخال مفهوم ضبابي مجموعات Intuitionstic Fuzzy sets (IFS)، وهو جيل من مفهوم مجموعة ضبابي مقدمة من قبل اتاناصوفAtanassov. في هذه

الورقة، يقترح طريقة جديدة لبحث باستخدام نظرية Intuitionstic Fuzzy (IF) المقترحة من اتاناصوف، هناك فى الطريقة المقترحة يوجد خوارزمية جديدة مقترحة التي تم تنفيذها واختبارها، ومقارنة مع الخوارزميات الاخرى، والتحليل والمحاكاة أظهرت النتائج أن Intuitionstic Fuzzy (IF) تحت التقدير " Branch and Bound"حققت تقنيات البحث عن أفضل كفاءة، تعقيد الوقت، و مقارنة عامل المتفرعة الفعال (b*) مع غيرها من تقنيات البحث.

Methods:

The concept of Intuitionstic Fuzzy sets (IFS), which is generation of the concept of a Fuzzy Set, has been introduced by k. Atanassov. In this paper, a new method of search using the Intuitionstic fuzzy theory of Atanassov is proposed. In the proposed method, there is a new proposed algorithm that have been implemented, tested, and compared with others algorithms; the analysis and simulation results showed that Intuitionstic Fuzzy Underestimated “Branch and Bound” search techniques have achieved better efficiency, time complexity, and effective branching factor comparing (b*) with other searching techniques.

البحث رقم (2)

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Title

Advanced Transition/Cluster Key Management Scheme for End-System Multicast Protocol

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ABSTRACT :

The recent growth of the World Wide Web has sparked new research into using the Internet for novel types of group communication, like multiparty videoconferencing and real-time streaming. Multicast has the potential to be very useful, but it suffers from many problems like security. To achieve secure multicast communications with the dynamic aspect of group applications due to free membership joins and leaves in addition to member's mobility, key management is one of the most critical problems. So far, a lot of multicast key management schemes have been proposed and most of them are centralized, which have the problem of "one point failure" and that the group controller is the

bottleneck of the group. In order to solve these two problems, we propose a Key Management Scheme, using cluster-based End-System Multicast (ESM). The group management is between both 1) the main controller (MRP, Main Rendezvous Point) and the second controllers (CRP, Cluster RP), and 2) the second controllers (CRPs) and its members. So, ESM simplifies the implementation of group communication and is efficient ways to deliver a secure message to a group of recipients in a network as a practical alternative to overcome the difficulty of large scale deployment of traditional IP multicast. In this paper, we analyze different key management schemes and propose a new scheme, namely Advanced Transi-tion/Cluster Key management Scheme (ATCKS) and find it has appropriate performance in security.

Keywords:

Multicast Protocol; End-System Multicast; Application-Level Multicast; Security; Group Key Management

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M. Alkubeily, H. Bettahar and A. Bouabdallah, “MDA-ALM: Membership Duration Aware Applica-tionlevel Multicast,” Proceedings of the 1st International Global Information Infrastructure Symposium Closing the Digital Divide, Marrakech, 2-5 July 2007, pp. 120-127.

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عنوان البحث:

عربى : مخطط متقدمة لإدارة توزيع المفاتيح لبروتوكول الاتصال المتعدد الطرفي

انجليزي: **Advanced Transition/Cluster key Management Scheme**

for End-System Multicast protocol

صاحب فكرة البحث : أيمن السيد احمد السيد عميرة

المشاركين فى البحث: لا يوجد

طريقة البحث:

النمو الأخير فى الشبكة العالمية انتج الأبحاث الجديدة في استخدام شبكة الإنترنت لأنواع جديدة من مجموعة الاتصال، مثل عقد المؤتمرات بالفيديو التعددية الحزبية والتدفق في الوقت الحقيقي .لذلك الاتصال المتعدد لديه القدرة على أن يكون مفيد جدا فى الاستخدام، لكنه يعاني من مشاكل كثيرة مثل الامن. لتحقيق الاتصالات المتعدد الآمن مع الجانب الحيوي من تطبيقات المجموعة بسبب حرية العضوية من الالتحاق وترك المجموعة بالإضافة إلى التنقل العضو، إدارة توزيع المفتاح هي واحدة من المشاكل الأكثر أهمية .حتى الآن، وقد تم اقتراح الكثير من التراسل مخططات لتوزيع المفتاح ومعظمهم يعتمدوا على المركزية، والتي لديها مشكلة" فشل النقطة واحدة"، ومشكلة عنق الزجاجة. من أجل حل هاتين المشكلتين، نقترح وضع خطة لإدارة المفاتيح، وذلك باستخدام الاتصال المتعدد المستندة إلى كتل متعدد (cluster-based ESM).إدارة المجموعة بين كل من (1) وحدة التحكم الرئيسية (MRP) وحدات التحكم الثانيه (CRP) (2) وحدات التحكم الثانيه وأعضائها. لذلك الاتصال المتعدد الطرفي يبسط تنفيذ مجموعة الاتصالات، وهي وسائل فعالة لايصال رسالة آمنة لمجموعة من المتلقين في شبكة كبديل عملي للتغلب على صعوبة نشر على نطاق واسع من الاتصال المتعدد التقليدي. في هذه الورقة، تم دراسة مختلف خطط إدارة المفاتيح، واقتراح مخطط جديد متقدمة لإدارة توزيع المفاتيح (ATCKS)، ونجد انه انسبب مخطط لإدارة توزيع المفاتيح.

Methods:

The recent growth of the World Wide Web has sparked new research into using the Internet for novel types of group communication, like multiparty videoconferencing and real-time streaming. Multicast has the potential to be very useful, but it suffers from many problems like security. To achieve secure multicast communications with the dynamic aspect of group applications due to free membership joins and leaves in addition to member’s mobility, key management is one of the most critical problems. So far, a lot of multicast key management schemes have been proposed and most of them are centralized, which have the problem of "one point failure" and that the group controller is the bottleneck of the group. In order to solve these two problems, we propose a Key Management Scheme, using cluster-based End-System Multicast (ESM). The group management is between both (1) the main controller (MRP, Main Rendezvous Point) and the second controllers (CRP, Cluster RP), and (2) the second controllers (CRPs) and its members. So, ESM simplifies the implementation of group communication and is efficient ways to deliver a secure message to a

group of recipients in a network as a practical alternative to overcome the difficulty of large scale deployment of traditional IP multicast. In this paper, we analyze different key management schemes and propose a new scheme, namely Advanced Transition/Cluster Key management Scheme (ATCKS) and find it has appropriate performance in security.

البحث رقم (3)

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Title

Enhanced TCP Westwood Congestion Avoidance Mechanism (TCP WestwoodNew)

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ABSTRACT:

Transport Control Protocol (TCP), the mostly used transport protocol, performs well over wired networks. As much as wireless network is deployed, TCP should be modified to work for both wired and wireless networks. Since TCP is designed for congestion control in wired networks, it cannot clearly detect non-congestion related packet loss from wireless networks. TCP Congestion control plays the key role to ensure stability of the Internet along with fair and efficient allocation of the bandwidth. So, congestion control is currently a large area of research and concern in the network community. Many congestion control mechanisms are developed and refined by researcher aiming to overcome congestion. During the last decade, several congestion control mechanisms have been proposed to improve TCP congestion control. Comparing these mechanisms, showing their differences and their improvements, and we identify, classify, and discuss some of these mechanisms of TCP congestion control such as Tahoe, Sack, Reno, NewReno, Vegas, and Westwood. TCP Westwood works for both wired and wireless network, and we propose a new algorithm called TCP WestwoodNew to increase the performance of TCP-Westwood. By enhanced the congestion avoidance of TCP Westwood by a new estimation to cwnd algorithm based on the network status. Also TCP WestwoodNew introduces a new estimation for Retransmission TimeOuts (RTO). RTO has been reported to be a problem on

network paths involving links that are prone to sudden delays due to various reasons. Especially many wireless network technologies contain such links. Spurious RTO often cause unnecessary retransmission of several segments, which is harmful for TCP performance, and unnecessary retransmissions can be avoided. We simulate the proposed algorithm TCP WestwoodNew using the well known network simulator ns-2, by comparing it to the original TCP-Westwood. Simulation results show that the proposed scheme achieves better throughput than TCP Westwood and decreases the delay.

Keywords :

TCP, Congestion Control Mechanisms

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عنوان البحث:

عربى : آلية تجنب الازدحام المحسنة لويستوود لبروتوكول التحكم بالإرسال (ويستوود محسن لبروتوكول التحكم بالإرسال)

انجليزي: Enhanced TCP Westwood Congestion Avoidance Mechanism (TCP WestwoodNew)

صاحب فكرة البحث : أيمن السيد احمد السيد عميرة

المشاركين فى البحث: شيماء حجاج

طريقة البحث:

بروتوكول التحكم في بالارسال وبروتوكول نقل يستخدم جيدا على الشبكات السلكية. يتم نشر ما يصل الى شبكة الاسلكية، ينبغي تعديل بروتوكول التحكم في بالارسال للعمل من أجل كل من الشبكات السلكية واللاسلكية. منذ تم تصميم بروتوكول التحكم في بالارسال للسيطرة على الازدحام في الشبكات السلكية، فإنه لا يمكن كشف بوضوح عدم ازدحام فقدان الحزمة فى الشبكات اللاسلكية. التحكم فى الازدحام يلعب دورا رئيسيا لضمان الاستقرار للإنترنت جنبا إلى جنب مع التوزيع العادل والفعال للتوزيع النطاق. لذلك، التحكم في الازدحام في الوقت الراهن على مساحة واسعة للبحث. يتم تطوير العديد من آليات التحكم في الازدحام وصقلها من قبل الباحث تهدف للتغلب على ازدحام. خلال العقد الماضي، تم اقتراح عدة آليات التحكم في الازدحام مع المقارنة بين هذه الآليات، والتي تبين خلافاتهم والتحسينات التي تحققها، ونحديد، وتصنيف، ومناقشة بعض هذه الآليات من التحكم في الازدحام مثل Tahoe, Sack, Reno, NewReno, Vegas, and Westwood. بروتوكول التحكم في بالارسال ويستوود Westwood يعمل لكلا شبكة السلكية واللاسلكية، ونقترح خوارزم جديدة تسمى TCP WestwoodNew لزيادة أداء بروتوكول التحكم في بالارسال ويستوود. بواسطة تحسين تجنب الازدحام في ويستوود فى بروتوكول التحكم في بالارسال من خلال تقدير جديد لخوارزمية نافذة الازدحام (cwnd) استنادا إلى حالة الشبكة. أيضا ويستوود المحسن يقدم تقدير جديد للمهلة إعادة الإرسال (RTO). وقد أبلغ RTO أن تكون مشكلة في مسارات الشبكة التي تنطوي على الروابط التي تكون عرضة للتأخير المفاجئ لأسباب مختلفة. يوجد كثير خصوصا تقنيات الشبكات اللاسلكية تحتوي على مثل هذه الروابط. تم عمل محاكاة لخوارزمات المقترحة TCP WestwoodNew باستخدام جهاز محاكاة شبكة معروفة NS-2، عن طريق مقارنتها لبروتوكول التحكم في بالارسال ويستوود الأصلي. نتائج المحاكاة تبين أن المخطط المقترح يحقق أفضل إنتاجية من ويستوود الاصلى ويقلل من التأخير.

:Methods

Transport Control Protocol (TCP), the mostly used transport protocol, performs well over wired networks. As much as wireless network is deployed, TCP should be modified to work for both wired and wireless networks. Since TCP is designed for congestion control in wired networks, it cannot clearly detect non-congestion related packet loss from wireless networks. TCP Congestion control plays the key role to ensure stability of the Internet along with fair and efficient allocation of the bandwidth. So, congestion control is currently a large area of research and concern in the network community. Many congestion control mechanisms are developed and refined by researcher aiming to overcome congestion. During the last decade, several congestion control mechanisms have been proposed to improve TCP congestion control. Comparing these mechanisms, showing their differences and their improvements, and we identify, classify, and discuss some of these

mechanisms of TCP congestion control such as Tahoe, Sack, Reno, NewReno, Vegas, and Westwood. TCP Westwood works for both wired and wireless network, and we propose a new algorithm called TCP WestwoodNew to increase the performance of TCP-Westwood. By enhanced the congestion avoidance of TCP Westwood by a new estimation to cwnd algorithm based on the network status. Also TCP WestwoodNew introduces a new estimation for Retransmission TimeOuts (RTO). RTO has been reported to be a problem on network paths involving links that are prone to sudden delays due to various reasons. Especially many wireless network technologies contain such links. Spurious RTO often cause unnecessary retransmission of several segments, which is harmful for TCP performance, and unnecessary retransmissions can be avoided. We simulate the proposed algorithm TCP WestwoodNew using the well known network simulator ns-2, by comparing it to the original TCP-Westwood. Simulation results show that the proposed scheme achieves better .throughput than TCP Westwood and decreases the delay

البحث رقم (4)

Title

Minimum Multicast Algorithm for Mobile Ad-hoc Networks

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Abstract:

This paper introduces multicast routing algorithm to reduce the cost of bandwidth of Mobile Ad-hoc NETworks "MANETs". We determined the minimum multicast tree by finding the Minimum Number of Transmission (MNT) using Minimum Cost Tree (MCT) and virtual mesh based. The proposed algorithm is compared to the Shortest Path Tree (SPT) algorithm, the one that most multicast routing protocols in "MANETs" use, on metrics number of transmission (bandwidth), faster join and throughput.

Keywords:

Mobile Ad-hoc NETworks (MANETs); Multicast routing trees; SPT; MCT and MNT.

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عنوان البحث:

عربى : خوارزمية الحد الأدنى للتكلفة للنقل المتعدد لشبكات اللاسلكية ذات العقد المتحركـــــة
انجليزي: Minimum Cost Multicast Algorithm for Mobile Ad-hoc Networks

صاحب فكرة البحث : أيمن السيد احمد السيد عميرة
المشاركين فى البحث: (1) محمد أمين عبدالواحد
(2) إبراهيم بيومي عمارة

طريقة البحث:

تقدم هذه الورقة خوارزمية الإرسال المتعدد التوجيه للحد من تكلفة عرض النطاق الترددي لشبكات اللاسلكية ذات العقد المتحركـــــة "MANET". عازمون على شجرة الحد الأدنى الإرسال المتعدد من خلال إيجاد الحد الأدنى لعدد االنقل (MNT) باستخدام شجرة الحد الأدنى للتكلفة (MCT) وتقوم على شبكة افتراضية. تتم مقارنة الخوارزمية المقترحة مع خوارزمية أقصر مسار (SPT)، ونستخدم واحد من معظم بروتوكولات التوجيه الإرسال المتعدد في استخدام "MANET"، على عدد من المقاييس انتقال (عرض النطاق الترددي)، أسرع الانضمام للمجموعة والإنتاجية. والمقصود الإرسال المتعدد لمجموعة الاتصالات التي تدعم نشر المعلومات من مرسل إلى جميع من يتلقى المجموعة. الصعوبات التي تواجه الشبكة من المتطفلين هي ندرة عرض النطاق الترددي، في وقت قصير الحياة بسبب طوبولوجيا واستهلاك الطاقة الحيوية الناجمة عن الحركة. ناقشنا بنية خوارزميات مختلفة. ووجدنا المقترح في هذا البحث يحقق أداء جيدا.

:Methods

This paper introduces multicast routing algorithm to reduce the cost of bandwidth of Mobile Ad-hoc Networks "MANETs". We determined the minimum multicast tree by finding the Minimum Number of Transmission (MNT) using Minimum Cost Tree (MCT) and virtual mesh based. The proposed algorithm is compared to the Shortest Path Tree (SPT) algorithm, the one that most multicast routing protocols in "MANETs" use, on metrics number of transmission (bandwidth), faster join and throughput. Multicast is intended for group communication that supports the dissemination of information from a sender to all receives of group. The difficulties of MANETs are the scarcity of bandwidth, short life time due to power consumption dynamic topology caused by nodes mobility. This problem put in force to simple design. We discussed the architecture of different .algorithms. The proposed one achieves a well performance

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البحث رقم (5)

Puplished In:

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Title

A Survey of Mechanisms for TCP Congestion Control

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Abstract:

As the Internet is expected to better support many applications such as multimedia with limit bandwidth, new mechanisms are needed to control the congestion in the network. Congestion control plays the key role to ensure stability of the Internet along with fair and efficient allocation of the bandwidth. So, congestion control is currently a large area of research and concern in the network community. Many congestion control mechanisms are developed and refined by researcher aiming to overcome congestion. During the last decade, several congestion control mechanisms have been proposed to improve TCP congestion control. This paper aims to comparing these mechanisms, showing their differences and their improvements, using the well known network simulator ns-2, and we identify, classify, and discuss some of these mechanisms of TCP congestion control such as Tahoe, Sack, Reno, NewReno, Vegas, and Westwood.

Keywords:

TCP, Congestion Control Mechanisms, about six key words separated by commas.

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Communications 27 (2003) pp. 41-58

عنوان البحث:

عربى : مسح لآليات التحكم في الازدحام فى بروتوكول التحكم بالإرسال

انجليزي: A Survey of Mechanisms for TCP Congestion Control

صاحب فكرة البحث : أيمن السيد احمد السيد عميرة
المشاركين فى البحث:
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(2) شيماء حجاج

طريقة البحث:

كما من المتوقع أن الإنترنت تدعم العديد من التطبيقات مثل الوسائط المتعددة مع محدودية النطاق، ثمة حاجة إلى آليات جديدة للسيطرة على الازدحام في الشبكة. التحكم في الازدحام يلعب دورا أساسيا لضمان الاستقرار للإنترنت جنبا إلى جنب مع توزيع عادل وفعال لعرض النطاق. لذلك، التحكم في الازدحام في الوقت الراهن على مساحة واسعة للبحث وقلق في المجتمع الشبكة. يتم تطوير العديد من آليات التحكم في الازدحام وصقلها من قبل الباحث تهدف للتغلب على ازدحام. خلال العقد الماضي، تم اقتراح عدة آليات التحكم في الازدحام لتحسين TCP التحكم في الازدحام. وتهدف هذه الورقة إلى المقارنة بين هذه الآليات، والتي تبين خلافاتهم والتحسينات، وذلك باستخدام جهاز محاكاة شبكة معروفة NS-2، وتحديد، وتصنيف، ومناقشة بعض هذه الآليات من التحكم في الازدحام TCP مثل Tahoe, Sack, Reno, NewReno, Vegas, and Westwood.

:Methods

As the Internet is expected to better support many applications such as multimedia with limit bandwidth, new mechanisms are needed to control the congestion in the network. Congestion control plays the key role to ensure stability of the Internet along with fair and efficient allocation of the bandwidth. So, congestion control is currently a large area of research and concern in the network community. Many congestion control mechanisms are developed and refined by researcher aiming to overcome congestion. During the last decade, several congestion control mechanisms have been proposed to improve TCP congestion control. This paper aims to comparing these mechanisms, showing their differences and their improvements, using the well known network simulator ns-2, and we identify, classify, and discuss some of these mechanisms of TCP congestion control such as Tahoe, Sack, Reno, .NewReno, Vegas, and Westwood

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البحث رقم (6)

Title

Link Analysis using Data Mining System.

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IJAR-CSIT
Research Paper
ISSN: 18398480

Abstract:

Center of attention of this paper on link analysis used by Data Mining systems to extract associations between individual data records or data sets involved in the same event. It demonstrates an implementation of the algorithm with custom modifications made to expand functionality and improve time and space complexity. The system makes use of the frequent itemsets to generate association rules, while also calculating support and confidence. The algorithms are integrated in a user-friendly system which can be used to generate frequent itemsets and extract association rules online in real time. Business intelligence mainly refers to computer-based techniques used in identifying, extracting, Gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions analyzing business data. Business Intelligence systems may be divided into reporting systems and data mining applications. Data mining is Knowledge Discovery in Data and the science of extracting useful knowledge from huge data repositories. Data mining applications often employ sophisticated mathematical and statistical techniques to perform data analysis, search for specific patterns or relationships, if they exist, and make future predictions.

Keywords:

Business Intelligence, Data Mining, Database Query, Algorithm.

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عنوان البحث:

عربى : تحليل الرابط علي الانترنت باستخدام نظام تنقيب البيانات

انجليزي: Link Analysis using Data Mining System

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طريقة البحث:

مركز الاهتمام من هذه الورقة على تحليل الارتباط المستخدمة من قبل أنظمة تنقيب البيانات لاستخراج سجلات البيانات بين الجمعيات الفردية أو مجموعات البيانات المشاركة في الحدث نفسه. فإنه يدل على تنفيذ خوارزمية مع تعديلات لتوسيع وظائف وتحسين وقت وتعقيد الاحجام. النظام يستفيد من البند المتكرر ليضع قواعد لتوليد تكوين الجمعيات، بينما حساب الدعم والثقة أيضا. يتم دمج خوارزميات في نظام سهل الاستعمال والتي يمكن استخدامها لتوليد مجموعات البند متكررة واستخراج قواعد الرابطة على الانترنت في الوقت الحقيقي. ذكاء الأعمال يشير أساسا إلى الكمبيوتر المستندة إلى التقنيات المستخدمة في تحديد واستخراج، وجمع وتخزين وتحليل وتوفير إمكانية الوصول إلى البيانات لمساعدة المستخدمين على اتخاذ قرارات أفضل. ويمكن تقسيم نظم ذكاء الأعمال في نظم الإبلاغ وتطبيقات التنقيب عن البيانات. استخراج البيانات هو اكتشاف المعرفة في البيانات واستخراج علم المعرفة المفيدة من مستودعات البيانات الضخمة. تطبيقات التنقيب عن البيانات في كثير من الأحيان تستخدم تقنيات متطورة رياضية والتقنيات الإحصائية لأداء تحليل البيانات، والبحث عن أنماط معينة أو العلاقات، إذا وجدت، وتقديم تنبؤات المستقبل.

Methods:

Center of attention of this paper on link analysis used by Data Mining systems to extract associations between individual data records or data sets involved in the same event. It demonstrates an implementation of the algorithm with custom modifications made to expand functionality and improve time and space complexity. The system makes use of the frequent item sets to generate association rules, while also calculating support and confidence. The algorithms are integrated in a user-friendly system which can be used to generate frequent item sets and extract association rules online in real time. Business intelligence mainly refers to computer-based techniques used in identifying, extracting, Gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions analyzing business data. Business Intelligence systems may be divided into reporting systems and data mining applications. Data mining is Knowledge Discovery in Data and the science of extracting useful knowledge from huge data repositories. Data mining applications often employ sophisticated mathematical and statistical techniques to perform

data analysis, search for specific patterns or relationships, if they exist, and .make future predictions