www.ijecs.in
International Journal Of Engineering And Computer Science ISSN:2319-7242
Volume 5 Issue 09 September 2016 Page No.18040-18043

A Survey on Mobile Wireless Network

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Abstract

Mobile computing is a promising technology that is used to transmit data, voice and video through a computer or any other wireless enabled devices and there is no fixed physical link between the devices. Mobile networking is a technology that enables wireless data connection and it avoid the costly process of introducing cables. We conduct a survey based on various aspects of mobile wireless networks. The various aspects are video multicast, workload dissemination, routing and scheduling and node failures.

Keywords:- Disruption tolerant networks, Mobile Social Networking, wireless networks, node management.

1 Introduction

Mobile wireless networking is useful is many fields. For example, mobile wireless networking is useful in mission critical application such as search and rescue, environment monitoring, disaster relief and military operations. For network communication TCP protocol is used. The TCP aware back pressure routing and scheduling algorithm increase performance of TCP protocol back pressure and scheduling[1]. In Disruption Tolerant Networks (DTN), for minimizing the time for executing complex application workload distributed among various loosely connected devices. For this workload distributed dissemination algorithm is used [2]. SoCast is a system that is used to stimulate high definition videos streams over cellular networks and to maintain effective co-operation among the clients [3]. For keeping tabs on a network, node failure detection algorithm is used. Due to the node movements, network topology is highly dynamic, therefore the node failure detection is a very tedious task [4].

2 Literature Survey

2.1 Routing and Scheduling

TCP aware backpressure routing and scheduling algorithm is developed for easy transmission through network to avoid difficulties like jitter, packet loss, out of order delivery etc.

L. Tassiulas and A. Ephremides [5] have proposed Multi-hop packet radio networks (PRNs), multi hop wireless transmission works as a hierarchical modulation multiplexes layers of different robustness into one stream. The performance criterion of a scheduling policy is its throughput that is characterized by its stability region, that is, the set of vectors of arrival and service rates for which the system is stable. L. Tassiulas, and A. Ephremides [6] have proposed a queuing model, at each time slot each queue may be connected to the server or not depending on the value of a binary random variable, the connectivity variable. allocation at each slot; is based on the connectivity information and on the lengths of the connected queues only. At the end of each slot, service may be completed with a given fixed probability. M. J. Neely, E. Modiano and C. Li [7] have proposed optimal control for general networks with both wireless and wire line components and time varying channels. A dynamic strategy is developed to support all traffic whenever possible, and to make optimally fair decisions about which data to serve when inputs exceed network capacity. K. Tan,J. Song, Q. Zhang and M. Sridharan [8] have proposed aggressive loss-based CC algorithms for improving connection and fully utilise network capacity. It can also effectively improve the link

utilization, have the weakness of poor RTT fairness. S. Moeller, A. Sridharan, B. Krishnamachari and O. Gnawali [9] have proposed backpressure routing, in which routing and forwarding decisions are made on a per-packet basis. In backpressure Collection Protocol (BCP) for sensor networks, it implements dynamic backpressure routing in wireless networks.

2.2 Work load dissemination

Workload is distributed among the nearby devices in Disruption Tolerant Networks. The main aim is distributed workload executed in minimum amount of time.

Bharadwaj, D. Ghose, and T. G. Robertazzi [10] have proposed the paradigm of load distribution is basically concerned with a large load which originates or arrives at one of the nodes of the network. In this paper, they surveyed the recent but fairly extensive literature on divisible load theory with special emphasis on recent work done in this area. G. Singh, C. Kesselman, and E. Deelman [11] have proposed a multi-objective algorithm genetic algorithm for minimizing resource provision cost and optimizing application performance. The resource availability in grids is generally unpredicted due to the autonomous and shared nature of the grid resources and stochastic nature of the workload resulting in a best effort quality of service. Y.-C. Cheng and T. G. Robertazzi [12] have proposed linear network of communicating processors to solve a computational problem in minimal amount of time. The processors in the networks may be equipped either with front end processors for communication off-loading or without front end processors. T. Spyropoulos, K. Psounis, and C. S. Raghavendra [13] have proposed a simple scheme called spray and wait, that manage to overcome the short coming epidemic routing and other flooding based schemes and avoids the performance dilemma inherent in utility based scheme. D. Anderson [14] proposed a system called BOINC. BOINC (Berkeley Open Infrastructure for Network Computing) is a software system that makes it easy for scientists to create and operate public resource computing projects.

2.3 video multicast

SoCast - a cooperative video multicast system based on social trust and social reciprocity. SoCast provides incentive for clients to share video packets with each other based on social ties, while taking into account the video encoding structure. R. Chandra, S. Karanth, T. Moscibroda, V. Navda, J. Padhye, R.Ramjee, and L. Ravindranath [15] have proposed DirCast system, which requires no changes to the 802.11 MAC protocol or the wireless access points. Software changes are required on clients only if they wish to participate in multicast sessions.
S. Deb, S. Jaiswal, and K. Nagaraj [16] have proposed IEEE 802.16e WiMAX, which is a promising new technology for *broadband* access networks. It ensures efficient fair and timely delivery of video in WiMAX networks. Y. Yu, P. Hsiu, and A. Pang [17] have proposed layer-based video coding, which is a promising technique for providing real-time video multicast services on heterogeneous mobile devices.It minimizes the total energy consumption and resource allocation for video multicast in fourth-generation wireless systems. S. Jakubczak and D. Katabi [18] have proposed SoftCast, a cross-layer design for mobile video which changes the network stack to act like a linear transform. As a result, the transmitted video signal becomes *linearly* related to the pixels' luminance.
S. Aditya and S. Katti [19] have proposed FlexCast techique that delivers a video reconstruction whose quality automatically varies with the channel conditions. It provides a video codec that exploits the unique properties of video as well as wireless channels to deliver graceful performance.

2.4 node failure

Node failure detection Node failure detection in mobile wireless networks is very challenging because the network topology can be highly dynamic due to node movements. We take a probabilistic approach and propose two node failure detection schemes that systematically combine localized monitoring, location estimation and node collaboration.

M. Natu and A. Sethi [20] have proposed fault detection algorithm, which designed with consideration of the tradeoffs between cost and accuracy of fault detection.

Detecting node failure is the cornerstone of developing fault-tolerant applications; it is essential to detect failure of a node holding a desired resource in order to allow processing to progress. M. Elhadef and A. Boukerche [21] have proposed failure detection service for wireless ad-hoc and sensor systems that is based on an adaptation of a gossip-style failure detection protocol and the heartbeat failure detector. C.-F. Hsin and M. Liu [22] have proposed of surveillance and monitoring systems used for various security purposes. The most important mechanism common to all such systems is the detection of anomalies and the propagation of alarms. D. Liu and J. Payton [23] have proposed a method for node failure detection. Detection of node failure requires additional messages to be sent across the network, which is costly in terms of energy consumption. R. Badonnel, R. State, and O. Festor [24] have proposed a fault monitoring approach for ad-hoc networks which takes into account this constraint.

3 Conclusion

Wireless network have a lot of advantages such as it enables multiple devices to share the internet connection remotely and share resources. It can handle a lot of users. Instant transfer of information is easier in mobile wireless networks.

Acknowledgments

We are grateful to our seminar guide Prof. Minu Lalitha Madhavu for her remarks, suggestions and for providing all the vital facilities like providing the Internet access and important books, which were essential. We are also thankful to all the staff members of the Department of Computer Science & Engineering of Sree Buddha College of Engineering, Alappuzha.

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