

MOBILE COMPUTING:

A USER STUDY ON HEDONIC/UTILITARIAN MOBILE DEVICE USAGE

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Abstract:-

Intrinsic motivators of technology beliefs have received scant attention in the technology acceptance literature despite indications of their efficacy. This study uses the framework of TAM to explore the effect of intrinsic variables on technology beliefs and user behavior. Specifically, we examine the effect of cognitive absorption and playfulness on user beliefs including perceived enjoyment and perceived usefulness within the context of mobile devices. Moreover, we manipulate the hedonic and utilitarian purpose of the mobile device to determine how the nature of the device influences user beliefs. Findings indicate that cognitive absorption and user playfulness significantly impact beliefs and that the hedonic or utilitarian orientation of the technology has implications for maximizing use.

Keywords : Mobile computing, hedonic, utilitarian, TAM, cognitive absorption, playfulness.

**CONTEXTUAL INFLUENCES ON USER SATISFACTION WITH
MOBILE COMPUTING:
FINDINGS FROM TWO HEALTHCARE ORGANIZATIONS**

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Abstract:-

Mobile information technologies (IT) are transforming individual work practices and organizations. These devices are extending not only the boundaries of the 'office' in space and time, but also the social context within which use occurs. In this paper, we investigate how extra-organizational influences can impact user satisfaction with mobile systems. The findings from our longitudinal study highlight the interrelatedness of different use contexts and their importance in perceptions of user satisfaction. The data indicate that varying social contexts of individual use (individual as employee, as professional, as private user, and as member of society) result in different social influences that affect the individual's perceptions of user satisfaction with the mobile technology. While existing theories explain user satisfaction with IT within the organizational context, our findings suggest that future studies of mobile IT in organizations should accommodate such extra-organizational contextual influences.

Keywords : User satisfaction, mobile technology, social context.

EFFICIENT VERIFICATION OF A MULTICAST PROTOCOL FOR MOBILE COMPUTING

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Received 29 November, 1999. Revised 6 November, 2000.

Abstract:

We present the formal verification of a multicast protocol for mobile computing. The protocol supports reliable and totally ordered communication within a set of processes running on mobile hosts. Mobile hosts communicate with a wired infrastructure through wireless links. The protocol is specified in Calculus of Communicating Systems and checked using the Concurrency Workbench tool. The protocol was chosen as a case study to evaluate the usefulness of a methodology, by means of which a property is checked on a reduced system, where the reduction is driven by the formula expressing the property itself. The reduction is obtained by transforming the program into one having a smaller representation. The approach is based on a logic, the selective mu-calculus, which has the characteristic that each formula allows the immediate pointing out of the parts of the system that do not alter the truth value of the formula itself, and thus can be ignored. We show and discuss the experimental results obtained.

SMART-CONTEXT: A CONTEXT ONTOLOGY FOR PERVASIVE MOBILE COMPUTING

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Abstract:

This paper addresses context in intelligent context-aware systems to support personalised service provision and cooperative computing. Context processing, context modelling, ontology, and OWL are introduced and a context reasoning ontology presented. Context implementation reduces to a decision problem which is characterised as one of selecting from a number of potential options based on the relationship between the values that describe the input and the solution, the modelling school of decision analysis attempts to construct an explicit model of such relationships, usually in the form of decision trees. An overview of decision trees with parametric design considerations is presented. Comparisons with related research are drawn and an evaluation and simulation of Smart-Context is presented. RDF/S with OWL and Jena provide an effective basis for autonomous decision making using processing rules, and the issue is one of implementation in adaptable and tractable solutions. A conclusion with open research questions is presented with consideration of potential directions for future research.

Keywords : Context, Context-awareness, Pervasive computing.

IMPROVING THE PERFORMANCE OF RELIABLE TRANSPORT PROTOCOLS IN MOBILE COMPUTING ENVIRONMENTS

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Abstract:

We explore the performance of reliable data communication in mobile computing environments. Motion across wireless cell boundaries causes increased delays and packet losses while the network learns how to route data to a host's new location. Reliable transport protocols like TCP interpret these delays and losses as signs of network congestion. They consequently throttle their transmissions, further degrading performance. We quantify this degradation through measurements of protocol behavior in a wireless networking testbed. We show how current TCP implementations introduce unacceptably long pauses in communication during cellular handoffs (800 ms and longer), and propose an end-to-end fast retransmission scheme that can reduce these pauses to levels more suitable for human interaction (200 ms). Our work makes clear the need for reliable transport protocols to differentiate between motion-related and congestion-related packet losses and suggests how to adapt these protocols to perform better in mobile computing environments.

WIRELESS NETWORKS

Author's Name:

1. *Thomson Reuters*
2. *HW Wilson*

Abstract:

The wireless communication revolution is bringing fundamental changes to data networking, telecommunication, and is making integrated networks a reality. By freeing the user from the cord, personal communications networks, wireless LAN's, mobile radio networks and cellular systems, harbor the promise of fully distributed mobile computing and communications, any time, anywhere.

Focusing on the networking and user aspects of the field, Wireless Networks provides a global forum for archival value contributions documenting these fast growing areas of interest. The journal publishes refereed articles dealing with research, experience and management issues of wireless networks. Its aim is to allow the reader to benefit from experience, problems and solutions described.

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QUASI-TREE MOBILITY MANAGEMENT FOR INTERNET CONNECTIVITY OF MOBILE AD HOC NETWORKS

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Abstract:

The location of mobile nodes must be managed to enable Internet connectivity of mobile *ad hoc* networks. Node mobility can be managed efficiently using a tree topology in which a mobile node registers with an Internet gateway along a tree path without using flooding. However, a node that loses connectivity to its parent has to find and connect to a new parent through a join-handshaking process. This tends to increase control overhead and impose some delay on on-going communication. Furthermore, the node may join its descendant because of the synchronization delay in updating topology change, creating a loop that significantly increases control overhead. We improve these problems by maintaining a quasi-tree topology in which a node maintains multiple parents. We also present a technique for detection and resolution of loops. The simulation results show that the quasi-tree mobility management approach far outperforms the traditional approaches and is highly robust against the significant increases in tree size and node mobility.

Keywords : Mobility management - Mobile ad hoc networks - Multiple parents - Quasi-tree – Registration.

NEAR-ZERO TRIANGULAR LOCATION THROUGH TIME-SLOTTED MOBILITY PREDICTION

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Abstract:

To setup efficient wireless mesh networks, it is fundamental to limit the overhead needed to localize a mobile user. A promising approach is to rely on a rendezvous-based location system where the current location of a mobile node is stored at specific nodes called locators. Nevertheless, such a solution has a drawback, which happens when the locator is far from the source–destination shortest path. This results in a triangular location problem and consequently in increased overhead of signaling messages. One solution to prevent this problem would be to place the locator as close as possible to the mobile node. This requires however to predict the mobile node's location at all times. To obtain such information, we define a mobility prediction model (an agenda) that, for each node, specifies the mesh router that is likely to be the closest to the mobile node at specific time periods. The location service that we propose formalizes the integration of the agenda with the management of location servers in a coherent and self-organized fashion. To evaluate the performance of our system compared to traditional approaches, we use two real-life mobility datasets of Wi-Fi devices in the Dartmouth campus and Taxicabs in the bay area of San Francisco. We show that our strategy significantly outperforms traditional solutions; we obtain gains ranging from 39 to 72% compared to the centralized scheme and more than 35% compared to a traditional rendezvous-based solution.

OPTIMAL TRANSMISSION OF HIGH DEFINITION VIDEO TRANSMISSION IN WIMEDIA SYSTEMS

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Abstract:

WiMedia systems are developed for indoor high-data-rate wireless systems. The H.264/AVC, a high-efficiency video coding technique, is considered for high definition (HD) video application. Considering the transmission of H.264/AVC based HD video over WiMedia, in this paper, we will propose a cross-layer architecture and an analytical model to calculate the optimal payload length with the constraints in error criteria, retransmission mechanism, and the delay budget. Besides, the required minimum reservation slots in WiMedia are also investigated to optimize the transmission performance of HD video.

Keywords: Cross layer - WiMedia MAC - Reservation - High definition video - H.264.

DISTRIBUTED ALGORITHMS FOR RESOURCE ALLOCATION OF PHYSICAL AND TRANSPORT LAYERS IN WIRELESS COGNITIVE AD HOC NETWORKS

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Abstract:

In this paper, by integrating together congestion control, power control and spectrum allocation, a distributed algorithm is developed to maximize the aggregate source utility and increase end-to-end throughput. Despite the inherent difficulties of non-convexity and non-separability of variables in the original optimization problem, we are still able to obtain a decoupled and dual-decomposable convex formulation by applying an appropriate transformation and introducing some new variables. The objective is accomplished by the interaction and coordination among three sub-algorithms of the algorithm through the congestion prices. The convergence properties of the three sub-algorithms are also proved. Simulation results illustrate several other desirable properties of the proposed algorithm, including the impacts of node mobility and path and packet losses on convergence and robustness. This work is a preliminary attempt towards a systematic approach to jointly designing a congestion control sub-algorithm and a power control sub-algorithm coupled with a spectrum allocation sub-algorithm.

Keywords : Congestion control - Power control - Spectrum allocation - Convex optimization - Cross-layer design - Dual decomposition - Cognitive ad hoc network.

LITRATURE SURVEY ON MOBILE COMPUTING



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