

Handheld Fast-track Feedback Instant Messaging

A Work-in-progress submission for Innovation in Telecommunication/Broadband Services

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Abstract - As mobile devices and networks become more data-centric, text messaging requires an extension of co-presence capabilities for better interactive discussion between input/output handicapped handheld users and their free form desktop counterparts. Given some degree of co-presence (online presence and awareness) in text-based Instant Messaging, we hope to increase this co-presence on a handheld with fast-track feedback (FF) mechanisms. These are user-defined gestures, such as emoticons, and prioritised messages. We are building a system that facilitates gesture input within an interactive text-based chat over a wireless network running Session Initiation Protocol (SIP). The chat bridges a robust desktop environment and a small number of handhelds. This work in progress looks into the SIP Instant Messaging and Presence Leveraging Extensions as a platform to provide fast-track interactive and co-presence feedback. The aim is to rubberise a hitherto plastic and limited instant messaging conversation. We shall measure co-presence levels between FF and standard IM environments in and without desktop and handhelds by engaging two groups of users in chats session. We expect to demonstrate that there exists high co-presence notion in open (work by Sun Research Awarenex Group and AT&T Hubbubme in similar domain were in closed systems) FF text messaging open environment as we would like to show that this higher presence brings a much more enhanced interactive discourse. The envisaged results are intended to extrapolate to online aware co-presence in the up and coming smart phones on 3G packet networks.

Index Terms— Fast-track feedback, Instant Messaging, Co-Presence, Wireless handheld.

I. INTRODUCTION

THE oratory, expressive discourse representations of text are the underlying cues of its meta-linguistic awareness as a communication medium. Instant Messaging (IM) as a variant of Computer Mediated Channel CMC incorporates level of participatory party presence (online presence) [6,7], and parties' social state within a communication space (awareness) [7]. The evolution of text messaging [8] from asynchronous (near-extinct paging, highly deployed Short Messaging Service) to synchronous IM [2,3,4] follows a trend of being interactive and co-presence centric.

Traditional text communication limitations (gestures, awareness, turn taking, sequencing) can be enhanced in IM with add on features and capabilities [4,6] especially in a

SIP IM and Presence Leveraging Extension SIMPLE [9] environment. The SIMPLE protocol enables SIP applications to extend IM co-presence as well as provide specialized embedded trigger events.

While fully entrenched in the standard desktop domain, IM is moving to the mobile domain [3] as mobile devices become more data-centric [11]. IM text messaging requires extension of co-presence [1,4,5,6] capabilities for better interactive discussion between input/output handicapped handheld users and their free form desktop counterparts. There is a need on the handheld for facilitated gesture input in an interactive text-based chat. The idea of an IM is against the backdrop of its co-presence [1,4] offering due to its near-synchronous property (capability). SMS, though widely available and established, suffers from its asynchronous nature.

We expect to demonstrate that there is a high co-presence [5,7] notion in FF text messaging open environment (work [2] in similar domain was on closed systems) as we would like to show that this higher presence brings into being a much more enhanced interactive conversation, like a gestured voice chat does.

II. TECHNICAL BACKGROUND

A. Visual Overview

Fast-tracking can be provided by 'tying' a handset key or handheld (PDA, Tablet) icon to a user-defined gesture, similar to handset speed dialing or clickable menu items in event driven programs. These on_click and on_keypress events provide 'quick' gesture response alongside event driven progress trackers allowing other parties to know who is composing a messaging, much like the turn-taking effect in a voice conversation.

Limited 2D and 3D emoticons that are used for expressive gesturing in IM and SMS are being deployed for the project to achieve fast track co-presence gesture feedback.

B. SIMPLE Message Extension

SIMPLE extends SIP for IM session by calling a newly defined "MESSAGE" method [9] to allow the SIP messaging stream to be established handling continuous sessions rather than make and break data chunk transfers of the format:

```
method = "MESSAGE 5060 sip
sip:btucker@uwc:5060;transport=tcp"
```

C. Fast-tracking

Voice chat responsive gestures reproduce face-to-face (F2F) chat facial expressions. IM FF mechanisms offer

similar gestures as outlaid in the FF hierarchical layer in Figure 2 showing three fast-track elements and two presence tracking events with an overlapping on click element on layer 4, denoting other party's responsiveness.

As seen in native IM presence, other party (buddy) online-offline status is via a SIMPLE integrated SUBSCRIBE request to a presence tracking providing functionality for keeping an eye on who is on and who is not online [3,7,10].

2D, 3D Emoticons	User Defined Hotkey T9 Predictive Text	On keydown typing event	Online presence	Buddy list
Fast-track feedback			Co-Presence tracking	
method = "MESSAGE"		INFO event	Package header event = "presence"	
INVITE	ACK	MEDIA, messages	OK	SUBSCRIBE, NOTIFY

Fig 2: Fast-track hierarchical layer

To this end we say that online presence (Awareness) relates to who is or is not online in the IM social space [7]. Presence indicators are indications of what interlocutors' actions are. With the background of limited input/output space on handhelds, IM standards of typing economy typography and emoticons [12] are further extended with on_click user-defined hotkeys.

III. METHODOLOGY

The main research question is: Considering that co-presence [5,6,7] exists in IM text messaging, does fast-track feedback extend this presence level in text-based messaging? The area of importance is the gesture enhancement made to an IM chat on a limited input entry, small screen space handheld and not how effective IM measures against real F2F discussion nor a voice talk.

A. Analysis

We shall measure co-presence levels between FF and standard IM environments in and without desktop and handhelds by engaging two groups of Internet users in chat sessions. Users fill out a questionnaire for usability and comparison analysis.

B. The Network

The mobile network consists of a WLAN hotspot (as a proxy for 3G MobileIP) integrated with the local area network (LAN) built around Cisco Aironet 1200 and Dlink DWL-900AP+ Access Points. Access is via Siemens LOOX 600 PDAs and Sony VAIO notebook affixed with WLAN cards.

C. Development

We are building a text messaging only SIP UA employing the Microsoft (MS) Real Time Communication Libraries in the MS Platform SDK. A basic functional UA has been tested for interoperability with the re-compiled SDK sample UA for Win2000 platform. Interoperability and presence is being tested with MS RTC Server. MS VS.NET integrated mobile form ensures thin client UA architecture workaround for the MS Pocket PC 2002 SIP Library and cross device platform. GPRS card affixed to the Pocket PC LOOX provides ubiquitous MobileIP connectivity.

IV. EXPECTED RESULTS

The enhanced input mechanisms of the FF system are expected to increase co-presence between handheld users and their desktop-based counterparts while in a synchronous discussion. Such enrich IM system will help bridge a robust desktop environment and a small number of handhelds.

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