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M.Sc IN COMPUTER SCIENCE

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H.S.UDAYANGANEE

This dissertation was submitted to the Department of Computer Science and Engineering of the University of Moratuwa in partial fulfillment of the requirements for the Degree of M.Sc. in Computer Science specializing in Software Engineering

Department of Computer Science and Engineering

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December 2006

The work presented in this dissertation has not been submitted
for the fulfillment of any other degree


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Dr. Gihan Dias
Supervisor

Abstract

Subscriber mobility and business communication outsourcing have driven competition among service providers to a fever pitch. To retain the existing subscriber base and expand into new markets, successful service providers are looking for ways to deliver personalized, differentiated, real-time multimedia services, such as collaborative meetings.

For this purpose, the Internet and intranets have been used to deliver continuous media, both stored and live, for a number of years. In this case, most of the attention has focused on providing guaranteed quality of service and end-to-end data transport, with every application using its own control protocol.

This thesis describes a web conferencing application developed by me which has the following features.

- Video conferencing
- Application sharing
- Transfer control of sharing applications

Although multimedia conferencing and application sharing among geographically dispersed users are increasingly popular, their spread is inhibited by platform dependency problems. Therefore this application is developed using Java as the implementation language in order to achieve platform independence.

The video conferencing feature provides user the ability to have video/audio conferencing session between host and the participant at any time they need it. Here the Session Initiation Protocol (SIP) has been used for inviting participants to multimedia session and other related protocols to control the multimedia conference.

The application sharing module uses the information obtained using SIP to create a connection between the participants which satisfies the need of reliable data transfer. An application can be controlled by a remote machine using the Transfer of Control application

In this project, video conferencing functionality has been implemented only as a proof of concept. The major implementation was application sharing. Here I have used the *screen capturing* approach to share applications. This approach provides platform independence as the application shared need not install or run in all participants' machines. With this approach, network resource usage is a major issue; hence I discuss the steps I have taken to alleviate that problem. I also discuss solutions for certain key problems found in application sharing like maintaining consistency, late-comers and floor control (Floor control ensures that only one person at a time controls shared applications).



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Acknowledgement

I express my gratitude to all who helped me in successfully completing the project, especially my project supervisor Dr. Gihan Dias for his fullest support in direction and supervision of the project and particularly for his guidance and frequent inspection of results, recommendation on methods.

I should also thank to my employer, Creative Software Solutions (Pvt.) Ltd. for providing the necessary hardware & software resources to successfully complete the project. And I should also thank to my colleagues Surendra Jayawardana and Dushantha Perera for their kind support in implementing the user interfaces needed for this project.

This project would not have been possible without the generous support from my spouse and parents during the whole project duration. Therefore my deep gratitude should go to them too. Finally, my thanks should go to my batch mates, friends and all the others who helped me in successfully completing this project.



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