THE STUDY OF MPEG 4 APPLICATIONS IN COLLABORATIVE VIRTUAL ENVIRONMENT

E-mail: 9015636@ mail.dyu.edu.tw

ABSTRACT

CURRENTLY, THE COMMUNICATION SYSTEMS OF WEB VIRTUAL ENVIRONMENTS ARE MAINLY COMPOSED OF 2D USER INTERFACES AND TEXT CHAT TOOLS. THOUGH THEY ARE USEFUL AND EASILY DEVELOPED FOR WEB COMMUNICATION. THEY LACKED OF SUPPORTING REAL-LIFE LIKE NONVERBAL COMMUNICATION FEATURES SUCH AS GESTURE AND BODY LANGUAGE THAT IN SOME OCCASIONS ARE MORE POWERFUL THAN ITS VERBAL COUNTERPART. THIS DRAWBACK IS PERHAPS ONE OF THE MAIN PROBLEMS THAT WILL HINDER PEOPLE TO USE WEB COMMUNICATION SYSTEMS. SOME WEB SYSTEMS START TO BUILD ANIMATED FIGURES FOR BROADCASTING NEWS TO ATTRACT PEOPLE. HOWEVER, UP TO DATE, ONLY FEW OF CURRENT WEB SYSTEMS ARE ABLE TO SUPPORT SIMPLE AND PREDEFINED GESTURES FOR NONVERBAL COMMUNICATIONS. THE EMERGING TECHNIQUE, H-ANIM STANDARD SPECIFICATION OF MPEG-4, PROVIDES A GOOD OPPORTUNITY TO IMPROVE CURRENT WEB CHAT ENVIRONMENTS. THIS RESEARCH INTENDS TO INVESTIGATE HOW SUCH TECHNOLOGY CAN BE COMBINED WITH MULTI-USER 3D WEB VIRTUAL ENVIRONMENTS TO PROVIDE A BETTER WEB COMMUNICATION ENVIRONMENT. WE WILL DESIGN AND BUILD A PROTOTYPE SYSTEM USING THIS NEW TECHNOLOGY SO THAT PEOPLE ARE ABLE TO USE GESTURES TO COMMUNICATE WITH OTHERS IN A WEB 3D VIRTUAL ENVIRONMENT. THE PROBLEMS ENCOUNTERED AND RESULTS WILL BE REPORTED FOR FUTURE RESEARCH.

Keywords : VIRTUAL REALITY, VRML, MPEG-4, H-ANIM

Table of Contents

REFERENCES

: 1.   (85)   ISBN:9576528704   2.   (85)   25~ 27   3.   (86)   MPEG-4   157-162   1.ACTIVEWORLDS.COM. (1999), HTTP://WWW.ACTIVEWORLDS.COM. 2.BABSKI C. (1999), MPEG 4 PLAYER DEMO,HTTP://LIGWWW.EPFL.CH/~BABSKI/STANDARDBODY/MPEG4/. 3.BAXTER:VIRTUAL HUMANOID IN VRML (1998), HTTP://LIGWWW.EPFL.CH/~BABSKI/STANDARDBODY/ 4.BELL, G., PARISI, A. AND PESCE, M. (1995), THE VIRTUAL REALITY MODELING LANGUAGE VERSIO -N 1.0 SPECIFICATION,HTTP://WWW.VRML.ORG/VRML1.0/VRML10C.HTML. 5.BERNIE, R., JUSTIN, C., CINDY, R. B., TIM, R. AND GEOFF, B. (1997), LATE NIGHT VRML 2.0 WITH JAVA, ZIFF-DAVID PRESS. 6.BLAXXUN INTERACTIVE(1999) , HTTP://WWW.BLAXXUN.COM. 7.BOULIC, R., MOLET, T., CAPIN, T. AND THALMANN, D. (1998), THE BODY PROPOSAL, MPEG 4 SNHC -PROPOSAL M1211. 8.CARL, E. L. AND TIM, A. (1994), THE VIRTUAL REALITY CASEBOOK, NEW YORK : VAN NOSTVAND P -RESS. 9.CODING OF AUDIO-VISUAL OBJECTS: SYSTEMS, FINAL DRAFT INTERNATIONAL STANDARD (1998), ISO /IEC 14496-1 JTC 1/SC 29/WG 11 N2201. 10.COSMOSOFTWARE (1999), HTTP://WWW.CAI.COM/COSMO/. 11.GEOMETREK HOMEPAE (2000), HTTP://WWW.GEOMETREK.COM/. 12.HANNES, H. V. AND JUSTINE, C. (1998),"BODYCHAT: AUTONOMOUS COMMUNICATIVE BEHAVIORS IN AVATARS," AUTONOMOUS AGENTS 98 MINNEAPOLIS MN USA, PP. 269-276. 13.H-ANIM SPECIFICATION FOR A STANDARD VRML HUMANOID, VERSION 1.1, ON-LINE PAPER (1999), H -TTP://ECE.UWATERLOO.CA/~H-ANIM/SPEC1.1/. 14.IGOR, P. AND TOLGA, C. (1997),"MPEG-4 FOR NETWORKED

COLLABORATIVE VIRTUAL ENVIRONMENTS, "VSMM'97, PROCEEDINGS INTERNATIONAL CONFERENCE, PP. 19-25. 15.JENNY, P., YVONNE, R., HELEN, S. AND DAVID B. (1994), HUMAN-COMPUTER INTERACTION, ADDIS -ON-WESLEY. 16.JIALIN, Z. (1998),"FLEXIBLE FACE ANIMATION USING MPEG-4/SNHC PARAMETER STREAMS,"IMAGE P -ROCESSING, ICIP 98. PROCEEDINGS. INTERNATIONAL CONFERENCE ON VOL.2, PP. 924-928. 17.JOSHUA, E. (1994), HOW VIRTUAL REALITY WORKS, ZIFF-DAVIS PRESS. 18.JOHN, V. (1995) VIRTUAL REALITY SYSTEMS, ACM PRESS, PP. 5-9, ISBN:0-201-87687-6. 19.KAISA, K., ANRI, K., TAINA, E. AND MIKE, R. (1998), "PRODUCING IDENTITY IN COLLABORATIV -E VIRTUAL ENVIRONMENTS,"PROCEEDINGS OF THE ACM SYMPOSIUM ON VIRTUAL REALITY SOFTWARE AND TECHNOLOGY, PP. 2-5. 20.LIVING WORLDS SPECIFICATION CODE AND COMMENTS (1997), HTTP://WWW.VRML.ORG/WORKINGGROUPS /LIVING-WORLDS/DRAFT_2/LW_CODE.HTM. 21.MIKE, W. AND VINCENT, B. (1999),"AVATARS IN LIVINGSPACE,"PROCEEDINGS VRML 99 OF THE FOU -RTH SYMPOSIUM ON THE VIRTUAL REALITY MODELING LANGUAGE. 22.MPEG-4 VERSION 2 MPEG-J (1999), ISO/IEC JTC1/ SC29/WG11 N2739. 23.MORRIS, O.J. (1995),"MPEG-2: WHERE DID IT COME FROM AND WHAT IS IT?,"MPEG-2 - WHAT IT I -S AND WHAT IT ISN'T, IEEE COLLOQUIUM ON PP. 1-5. 24.NORMAN, I. B., MARTHA, S. P. AND RAMA B. (1999),"ANIMATION CONTROL FOR REAL -TIME VIRTU -AL HUMANS,"COMMUNICATIONS OF THE ACM, VOL.42, NO.8. 25.OVERVIEW OF THE MPEG-4 STANDARD (1997), ISO/IEC/MPEG, MPEG REQUIREMENTS GROUP, N1682. 26.PAUL, J. D., PRAKASH, M. AND DANIEL, H. (1998),"BUILDING OPENWORLDS," PROCEEDINGS OF TH -E THIRD SYMPOSIUM ON VIRTUAL REALITY MODELING LANGUAGE. 27.RALF, S. (1998),"MPEG-4:A MULTIMEDIA COMPRESSION STANDARD FOR INTERACTIVE APPLICATIONS AND SERVICES,"ELECTRONICS & COMMUNICATION ENGINEERING JOURNAL, PP. 253-262. 28.ROD, R. (1994),"VR - THE USER INTERFACE OF THE FUTURE?," ASSEMBLY AUTOMATION, VOL.14, NO.3, PP. 27-29. 29.ROB, K. (1999), MPEG-4 OVERVIEW, ISO/IEC JTC1/SC29/WG11 N2995. 30.SANDEEP, S. AND MICHAEL, Z. (1999), NETWORKED VIRTUAL ENVIRONMENTS : DESIGN AND IMPLEME -NTATION, ADDISON -WESLEY PRESS, ISBN: 0201325578. 31.SHUNSUKE, Y., TOMONORI, U. AND KEN, S. (1999),"VIDEO AVATAR: EMBEDDED VIDEO FOR COLLABO -RATIVE VIRTUAL ENVIRONMENT,"MULTIMEDIA COMPUTING AND SYSTEMS, IEEE INTERNATIONAL CONF -ERENCE ON VOL.2, PP. 433-438. 32.SNHC VERIFICATION MODEL 7.0 (1998), ISO/IEC JTC1/SC29/WG11 MPEG98/W2068. 33.THE PALACE VISUAL CHAT COMMUNITIES (1999), HTTP://WWW.THEPALACE.COM/. 34.TOLGA, K. (1997),"VIRTUAL HUMAN REPRESENTATION AND COMMUNICATION IN VLNET NETWORKED VIR -TUAL ENVIRONMENT,"IEEE COMPUTER GRAPHICS AND APPLICATIONS, VOL.17, PP. 42-53. 35.TOLGA, K., IGOR S., NADIA, M. AND DANIEL, T. (1999), AVATARS IN NETWORKED VIRTUAL ENVIR -ONMENTS, WILEY PRESS, ISBN:0471988634. 36.TOSHIYA, N., YOSHIYUKI, M., TOSHIKI, H., TIM, C. AND SHIGEO, A. (1999),"A COMPRESSION/D -ECOMPRESSION METHOD FOR STREAMING,"PROCEEDINGS VRML 99 OF THE FOURTH SYMPOSIUM ON THE -VIRTUAL REALITY MODELING LANGUAGE. 37.VIRTUAL REALITY MODELING LANGUAGE SPECIFICATIONS (1997), ISO/IEC 14772-1. 38.WEB3D ORGANIZATION (1996), AN OVERVIEW OF THE VIRTUAL REALITY MODELING LANGUAGE, HTTP:/ /WWW.VRML.ORG/ TECHNICALINFO/SPECIFICATIONS/VRML2.0/FINAL/OVERVIEW.