

**IEEE
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The MultiMedia communications Technical Committee (MMTC) is a volunteer group that examines systems, applications, services and techniques in which two or more media are used in the same session. These media include, but are not restricted to, voice, video, image, music, data, and executable code. The scope of the committee includes conversational, presentational, and transactional applications and the underlying networking systems to support them.

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You can also navigate through MMTC mailing list archive (since Feb. 2004).

<http://barbarian.comsoc.org/comsoc.org/multicommm/>

MMTC Election

ICC 2006, June 2006, Istanbul, Turkey

Future MMTC Meetings

CCNC 2006, January 2006, Las Vegas, Nevada, USA
January 8th 2006, during CCNC 2006.

CCNC 2006 MMTC Activities

(7-10 January 2006)

Technical Sessions

Special Sessions

Demonstrations

Tutorials

DRM Workshop

NIME Workshop

HWN-RMQ Workshop



ICC 2006 MMTC Activities

(June 11 - 15, 2006)

Multimedia Communications Workshop: State of the Art and Future Directions

ICME 2006 MMTC Activities

(July 9 - 12, 2006)

Peer-to-Peer Multimedia Special Session

GLOBECOM 2006 MMTC Activities

(27 November - 1 December 2006)

Multimedia Communications Symposium

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A WORD FROM THE E-LETTER E-I-C

Marco Rocchetti

The goal of the E-Letter is to disseminate issues that focus on opinions, initiatives, scientific achievements and perspectives of multimedia with an emphasis on the communication technologies.

The current issue of the E-Letter features an annotated bibliography on Edutainment.

It was provided by Paola Salomoni and Silvia Mirri from the Department of Computer Science, University of Bologna, Italy. In their article, titled "An Annotated Bibliography on Networked Edutainment", the authors review relevant contributions in the field of networked edutainment.

We renew the invitation to everyone to become regular contributor by submitting proposals for columns, perspective articles and annotated bibliographies. Information for submissions can be found at the MMTC website:

<http://www.comsoc.org/~mmc>.

Enjoy this issue!

Marco Rocchetti
Editor-in-Chief E-Letter

COSPONSORING / RELATED CONFERENCES AND WORKSHOPS

CCNC 2006

January 7 - 10, 2006

Las Vegas, Nevada, USA

CCNC is a major annual international conference organized with the objective of bringing together researchers, developers, and practitioners from academia and industry working in all areas of consumer communications and networking. CCNC 2006 will present the latest approaches and technical solutions in the areas of consumer networking, enabling technologies such as middleware and multimedia, and novel applications and services.

ICC 2006

June 11 - 15, 2006

Istanbul, Turkey

ICC 2006 will consist of a general topic symposium, eight specific symposia, Business Applications and Executive Sessions, Tutorials, and Workshops. ICC 2006 program committee is soliciting original papers describing state-of-the-art research and development in all areas of communications and networking. Prospective authors are invited to submit original technical papers. Proposals for Tutorials and Workshops are also invited.

ICME 2006

July 9 - 12, 2006

Toronto, Ontario, Canada

ICME 2006 is a major conference organized with the objective of bringing together researchers, developers, and practitioners from academia and industry working in all areas in multimedia. ICME is co-sponsored by four IEEE societies (the Circuits and Systems Society, the Communications Society, the Computer Society, and the Signal Processing Society).

GLOBECOM 2006

27 November - 1 December 2006

San Francisco, California, USA

The objective of this conference is to provide a platform for researchers and technologists to present new ideas and contributions in the form of technical papers, panel discussions, as well as, test-bed implementations and real-world evaluation of many ideas in wireless communications. IEEE Globecom 2006 will feature also a Multimedia Communications Symposium.

CONFERENCE CALENDAR

CONFERENCE	LOCATION	INFORMATION
CCNC 06 IEEE Consumer Communications and Networking Conference	January 7 - 10, 2006, Las Vegas, Nevada, USA	http://www.ieee-ccnc.org/2006/
WCNC 06 IEEE Wireless Communications & Networking Conference	April, 3-5, 2006 Las Vegas, Nevada, USA	http://www-ieee-wcnc.org/2006/
ICC 06 International Conference on Communications	June 11 - 15, 2006, Istanbul, Turkey	http://www.icc2006.org/
ICME 06 IEEE International Conference on Multimedia & Expo	July 9 - 12, 2006 Toronto, Ontario, Canada	http://www.icme2006.org/
EntNet 06 International Conference on Enterprise Networking & Services	September 11-13, 2006 Vancouver, British Columbia, Canada	http://www.ieee-entnet.org/2006/
PIMRC 06 IEEE Symposium on Personal, Indoor, and Mobile Radio Communications	September 11-14, 2006 Helsinki, Finland	http://www.pimrc2006.org/
MobiMedia 06 Mobile Multimedia Communications Conference	September 18-20, 2006 Alghero, Sardinia, Italy	http://www.mobimedia.org/
MILCOM 06 IEEE/AFCEA Military Communications Conference	October 23-25 Washington, DC, USA	http://www.milcom.org/
GLOBECOM 06 IEEE Global Telecommunications Conference	27 November - 1 December 2006 San Francisco, CA USA	http://www.ieee-globecom.org/2006/

MMTC INTEREST GROUPS

Based on the research interests of MMTC members, several IGs have been initiated led by experts and active researchers in each area. Detailed info about the IG charters, focus areas of each IG, and their activities are announced at

<http://www.comsoc.org/~mmc/>

and through the reflector. The IGs are:

(MSIG) Media Streaming

Chair: Pascal Frossard

Vice-chair: Juan Carlos de Martin

(HNIG) Home Networking

Chair: Prof. Madjid Merabti

Vice-chair: Heather Yu

(MobIG) Mobile and Wireless Multimedia

Chair: Prof. R. Chandramouli

Vice-chair: Oliver Wu

(SecIG) Multimedia Security

Chair: Suba Subbalakshmi

Vice-chair: Deepa Kundur

(QoSIG) Quality of Service

Chair: Qian Zhang

Vice-chair: Apostolis Salkintzis

(ACIG) Interest Group on Autonomic Communications

Chair: Xiaoyuan Gu

Vice-chair: Jiang (Linda) Xie

Call for Chair Nominations, Volunteers, and Members:

IG Chairs Nomination and Volunteers: We encourage you to volunteer for the available positions. It is a great networking opportunity. Furthermore, it gives you new means to contribute to the technical activities and to promote your career in multimedia communications area. Nomination and volunteers should be sent to the MMTC chair via email.

IG Membership: Membership is free. Information about how to join each IG will also be available at each IG will be available at the MMTC Web site. Please stay tuned.

Interest Group on Autonomic Communications

A new IG has been approved, ACIG.

IEEE ACIG Membership gives you the opportunity

- to network with technical experts in Autonomic Communications,
- to contribute to the technical activities in Autonomic Communications.

Joining IEEE ACIG is free and easy. Simply go to the membership subscription page at:

<https://www.ibr.cs.tu-bs.de/cgi-bin/mailman/listinfo/ieeeeacig>

The mailing list, ieeeeacig@ibr.cs.tu-bs.de is the communication channel with the ACIG. To post a message to the list, send e-mail to ieeeeacig@ibr.cs.tu-bs.de.

The mail archives are located at:

<http://www.ibr.cs.tu-bs.de/pipermail/ieeeeacig>

Related News and Events:

- *Call for Papers:* IEEE CCNC'06 Special Session on Autonomic Communications, Las Vegas, NV (7-10 January 2006).
- *Upcoming Conferences:* IEEE ICC 2006 General Symposium, Istanbul, Turkey (June 11-15, 2006).

AWARDS

MMTC Distinguished Service Award – Given to a MMTC member with exemplary service to MMTC over a sustained period of time.

Prize

Certificate and plaque.

Basis for judging

Exemplary service to MMTC over a sustained period of time.

Eligibility

- The nominee must be a MMTC member at the time of nomination.
- The nominee must have been a MMTC member for a sustained period of time.

Winner of the 2004 ComSoc MMTC Distinguished Service Award

Dr. Charles N. Judice

For his exemplary service to the Multimedia Communications Technical Committee and the multimedia communications community at large.

MMTC Best Paper Award – Given to an outstanding paper in the area of multimedia communications published in any ComSoc magazine, journal, or ComSoc sponsored conference in the previous two calendar years.

Call for Nominations

IEEE Comsoc Multimedia Communications Technical Committee will give a yearly award to the Best Paper in the multimedia communications area.

Prize

IEEE plaque signed by the ComSoc President.

Basis for judging

Any paper published in an IEEE Comsoc journal/magazine or in the proceedings of an IEEE Comsoc-sponsored conference/workshop/symposium, in the two years preceding the election.

Paper nominations have to be sent by email to MMTCawdcommittee@netscape.net, with subject line 'MMTC-BPA Nomination'.

The nomination should include the complete reference of the paper, author information, a brief supporting statement (maximum one page), the name of the nominator, and an electronic copy of the paper when possible. The hard deadline for paper nomination is February 15th, 2006. Additional information, and election by-laws are available on the MMTC website.

Winner of the MMTC best paper award 2004

A Cross-Layer Quality-of-Service Mapping Architecture for Video Delivery in Wireless Networks, by Wuttipong Kumwilaisak, Y. Thomas Hou, Qian Zhang, Wenwu Zhu, C.-C. Jay Kuo, and Ya-Qin Zhang, published in *IEEE JSAC*, December 2003.

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If you like to join MMTC Mailing List, the indications how to subscribe/unsubscribe are reported at <http://www.comsoc.org/~mmc/membership.html>.

MMTC ELECTION:

MMTC Election will be at ICC2006, June 11 - 15, 2006, in Istanbul, Turkey.

An Annotated Bibliography on Networked Edutainment

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INTRODUCTION

Edutainment, especially in networked environments, is emerging as one of the most innovative use of technological applications in teaching/learning activities. The word *edutainment* is a neologism coined to combine the rather old idea of learning through playing with the use of new media, like TV or computer applications. It is used to describe a wide range of media aimed at educating while entertaining or entertaining while educating, from Virtual Reality to Video Games and Interactive Story Telling. Considering the large and complex set of methodologies, applications and issues involved in networked edutainment, a corpus of sources must take into account different aspects. Whilst technological issues are usually inherited from general literature on multimedia entertainment, materials specifically devoted to edutainment are often related to application design [1].

Using the application class as a primary categorizing element, a first group of interesting papers introduces and explores the use of video games in education [2, 3, 4, 5, 6]. Experiences emerging from these resources underline a large use of Game-Based Learning (GBL) in a wide range of disciplines and contexts. It is worth noticing that the extensive application of such a methodology to civil and military training - simulating emergence/war situations - has strongly enforced technologies and devices devoted to Game-Based Learning [7, 8].

A second application class traditionally employed in educational processes uses Virtual Reality (VR) to offer students more effective learning methods [9, 10, 11, 12, 13, 14]. Immersive virtual reality is used to offer the user a learning experience similar to that of the real world [15].

Let us categorize a last class of networked edutainment applications as *Interactive Story Telling*

(IST). This term is used to refer to emerging multimedia applications that involve users in playing a role by combining technologies and interactive features derived by stories, games, and virtual environments. Educational use of IST partially overlaps with the virtual and synthetic environments introduced by GBL or VR, but typically empathizes narrative and communication features [12, 16, 17, 18].

Finally, networked edutainment is also influenced by new emerging trends characterized by a general shift of network application towards ubiquity and nomadicity. Examples of “everywhere, everyone, every time” networked edutainment are emerging considering as main aspects:

- *Mobility* [18, 19, 20]. Mobility can significantly enhance learning possibilities as well as the availability of networked edutainment and the experimental use of these applications in outdoor learning activities.
- *Multimodality and Accessibility* [13, 16, 17, 21]. Multimodal interfaces are used to enhance mobility and, more generally, to increase the interactivity of networked edutainment. Besides, different countries may have specific laws regarding minimum accessibility requirements for didactical materials that also apply to edutainment applications. Edutainment could also be used to offer training to people with special needs.
- *Interoperability* [22, 23]. Many interactive media are now available to users, but networked edutainment is prevalently deployed on computers. Interactive TV (ITV) represents quite a recent development, one that could effectively add significant value to networked edutainment.

ANNOTATED BIBLIOGRAPHY

[1] C.A. Papandreou and D.X. Adamopoulos, *A Framework for the Application of Distributed Broadband Multimedia Communication Services in Education and Training*, **Education And Information Technologies (Official Journal of the IFIP Technical Committee on Education)**, Volume 2, Number 3, September 1997, Pages 207-218.

The authors examine the influence of multimedia communication services on education and training, and introduce a framework for communication services and applications in education and training. This framework is aimed at designing and implementing distributed, broad-band multimedia applications and includes a generic model for educational communication systems. The paper considers all the different aspects involved, from network infrastructure to application requirements. In order to analyze technical issues, such as system requirements and general problems of multimedia communication systems, the authors present a framework application in the form of a telecommunications training.

[2] M. Prensky, *Digital Game-based Learning*, **ACM Computers in Entertainment**, Vol. 1, No. 1, October 2003, Book 02, Pages 21-21.

Two years after the publication of his book *Digital Game-based learning*, the author illustrates how learners have changed, how games can teach and why they work. This work provides an interesting description of the motivations that encourage the use of game-based learning. In particular, the author asserts that successful education mainly relies on learners' motivation, since motivated learners are more likely to achieve their goals. In this sense, GBL is one of the most effective learning activities, because gaming involves players and provides non-stop learning opportunities. The author describes the rapid growth of this phenomenon, providing examples of edutainment projects and evaluating their different social impact.

[3] M. De Aguilera and A. Méndiz, *Video Games and Education (Education in the Face of a "Parallel School")*, **ACM Computers in Entertainment**, Vol. 1, No. 1, October 2003, Article 01, Pages 10-10.

Is playing video games good or bad for children?

To answer this question the authors focus on the educational potential of games, trying to overcome generalized and stereotyped assumptions of many authorities and educators. They start by discussing the widespread belief that videogames have strong negative effects on young people to point out the lack of scientific evidence to support this claim. On the contrary, the authors prove the positive learning effects of video games by reporting some interesting results (primarily from psychological and psychiatric researches).

On the whole, the paper offers a good critical research review of the advantages and disadvantages of video games, expressing their support for GBL in education.

[4] C. Perrone, D. Clark and A. Repenning, *WebQuest: Substantiating Education in Edutainment through Interactive Learning Games*, in **Proceedings of 5th International World Wide Web Conference, 1996**, Pages 1307-1319.

In this paper, the authors introduce WebQuest, which is a system combining the old quest game with new Web potential. WebQuest is an interactive application that allows students to be both players and authors of a Web-based quest game. The whole Web is used as a basis to obtain suggestions and, more generally, information, both through authoring and solving phases. The authors underline the importance of both game creation and playing as effective learning opportunities for students.

[5] H. Yang, *A General Framework for Automatically Creating Games for Learning*, in **Proceedings of the Fifth IEEE International Conference on Advanced Learning Technologies (CALT'05), 2005**, Pages 28-29.

Game based learning uses games in education, in order to focus teaching and having fun. However, creating games is not so easy. In this paper Yang proposes a general framework for creating games that can be applied in many domains minimizing teachers' effort. The games are created by simply writing scripts in order to define the didactical goals and the set of steps required to complete them. The system will automatically create a game based on these scripts. The paper describes the four main components of the framework: the script editor, the map editor, the template databases and the game environment.

[6] H. S. Kim, S. B. Kim, *An Integrated Course Based on Educational Games*, in *Proceedings of the International Conference on Information Technology: Coding and Computing (ITCC'05)*, 2005, Pages 436-441.

Authors investigate how to combine different subjects in the same integrated course and present in this work a web-based integrated course they have developed applying both web technology and game-based learning materials, in order to achieve an interdisciplinary approach.

The authors evaluate the learning effects of this approach, presenting an integrated course structure and lessons plans at middle schools. The results indicate that this non-traditional approach could be efficient in improving the learning effects.

[7] E.A. Fitzsimmons and J.D. Fletcher, *Beyond DoD: Non-Defense Training and Education Applications of DIS*, in *Proceedings of IEEE*, Vol. 83, No. 8, August 1995, Pages 1179-1187.

Fitzsimmons and Fletcher investigate the effectiveness of networked simulation for education and training in order to find possible applications for Distributed Interactive Simulation (DIS) in a non-defense world. In Defense applications, networked simulation allows physically dispersed participants to engage each other directly in real-time combat operations in a shared, virtual environment through the use of simulation technologies and computer networking. Focusing on the functional capabilities of DIS in networked simulation, the authors show possible educational applications of a technology that was originally born in a military context.

[8] F. Maguire, M. van Lent, M. Prensky and R.W. Tarr, *Defense Combat Sim Olympics – Methodologies Incorporating the “Cyber Gaming Culture”*, in *Proceedings of the International Digital Games Research Conference*, 2003.

Far from claiming to present an exhaustive and comprehensive study, the authors examine three different areas related to the implementation of simulation and computer games: (i) game development, (ii) usage in fixed locations and (iii) event-based experiences. In particular, the paper presents an evaluation of the potential military advantages of these three areas for recruiting, pre-training and training. The authors analyze both military and civilian use, suggesting specific

applications.

[9] M. Roussou, *Learning by Doing and Learning Through Play: An Exploration of Interactivity in Virtual Environments for Children*, *ACM Computers in Entertainment*, Vol. 2, No. 1, January 2004, Article 01, Pages 10-10.

In this article, the author investigates interactivity as a central yet complex component of virtual environments, and its effects on leisure and learning activities. Roussou offers a critical review of examples of immersive virtual reality worlds for children, with particular attention given to the role and nature of interactivity. Interactivity is explored in relation to learning by doing, playing and storytelling.

Several projects that consider interactivity as a key component are described, with a particular interest for virtual learning environments in public spaces, such as museums.

[10] A.P. Piovesan Melchiori Peruzza and M.K. Zuffo, *ConstruiRV: Constructing Knowledge using the Virtual Reality*, in *Proceedings of the International Conference on Computer Graphics and Interactive Techniques*, 2004, Pages 180-183.

Many applications of VR in education are aimed at reproducing scientific environments. The authors introduce an ongoing project called Didactic Tool ConstruiRV that allows students to learn concepts (i.e. in physics) by living virtual experiences in a virtual environment. The system allows cooperation of many net users, thus overcoming their actual physical distance. This system could be used in a classroom with a teacher or as a support technology for distance education. Every user is represented by an avatar (an agent) that he/she can control, or by a synthetic agent. The users (and the avatars) interact with the virtual environment and live a “learning by doing” experience.

[11] Y. Cai, I. Snel, B. Suman Bharathi, C. Klein and J. Klein-Seetharaman, *Towards Biomedical Problem Solving in a Game Environment*, in *Proceedings of the International Conference on Computational Science*, 2003, Pages 1005-1014.

Similarly to [8], this paper presents a VR system that simulates a scientific context. This work presents a game-based problem-solving system in which users can investigate biological interactions by navigating both at an atomic and macroscopic level. This

environment offers three different interaction modalities that can be selected by the user: role-play, voyage and networked problem-solving. A prototype of this environment has been implemented on PC and tested by preschool-age children. Results of this experiment show that this game-based problem-solving environment improves users' ability to learn biology notions.

[12] M. Song, T. Elias, I. Martinovic, W. Mueller-Witting and T.K.Y. Chan, *Digital Heritage Application as an Edutainment Tool*, in **Proceedings of the International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2004)**, Singapore. June 2004, Pages 163-167.

The paper defines a framework to support the development of Digital Heritage edutainment applications. The purpose of the authors is to give users the opportunity to explore a digitally reconstructed heritage environment and learn through virtual experiences.

In order to guide the users in the virtual environment, a Virtual Tour Guide is included in the application. This agent presents cultural and historical information through non-linear storytelling techniques. The IST component creates specific contents in order to better suit the different profiles and needs of users, according to their knowledge.

[13] D. Tzovaras, G. Nikolakis, G. Fergadis, S. Malasiotis and M. Stavrakis, *Design and Implementation of Virtual Environments for Training of the Visually Impaired*, in **Proceedings of the International ACM Conference on Assistive Technologies**, 2002, Pages 41-48.

Usually VR effectiveness is assessed in terms of visual impact. This paper shifts the focus to a virtual reality application that allows visually impaired people, in particular blind people, to study and interact with various virtual objects. The main challenging aspect of this system is that of addressing a realistic virtual representation without any visual information, combining haptic and sound information to improve the possibilities for a blind person to extract rich and educative information from artificially controlled simulated virtual environments.

[14] N. Di Blas, P. Paolini, C. Poggi, *3D Worlds for Edutainment: Educational, Relational and*

Organizational Principles, in **Proceedings of the 3rd International Conference on Pervasive Computing and Communications Workshops (PerCom 2005 Workshops)**, 2005, Pages 291-295.

The paper presents the learning impact of SEE, Shrine Educational Experience, related to educational, relational and organizational principles. SEE is a didactic experience based on an online 3D virtual world shared over the Internet and is born thanks to a joint cooperation between Politecnico di Milano and the Israel Museum. In SEE students meet together to learn and play, tackling cultural topics related to the Dead Sea Scroll, a set of manuscripts written between 150 BC and 68 AD, found near the Dead Sea and the archeological site of Qumran.

During cooperative sessions students discuss via chat, play games, and explore the virtual environment under the supervision of a tutor from SEE staff. Students learn detailed cultural contents, while interaction and games arise their interest and increase their motivation.

[15] N. Osawa, K. Asai, N. Takase and F. Saito, *An Immersive System for Editing and Playing Music on Network-connected Computers*, in **Proceeding of the 5th International Conference on Information Visualization**, July 2001, Pages 630-635.

Recalling the idea presented in [4] that preparing an educational activity is in itself an effective way to learn, the authors present an immersive music system prototype designed to edit and play music in an immersive virtual environment. This system offers students an immersive VR space where they can manipulate and play musical notes. In particular, this environment allows both music editing (loading, copying, moving and deleting) and playing. The system works on a group of computers in a fast local area network, where a computer executes the application body and the others process input/output data using distributed I/O devices.

[16] N.O. Bernsen and L. Dybkjær, *Evaluation of Spoken Multimodal Conversation*, in **Proceedings of the 6th International Conference on Multimodal Interfaces**, 2004, Pages 38-45.

Speech interfaces can effectively support the interaction in edutainment systems. The paper describes a prototype of a multimodal edutainment application called Spoken Dialogue System (SDS),

which enables users to have spoken and gesture conversation with a virtual but realistic fairytale author Hans Christian Andersen. This system, called HCA (Hans Christian Andersen), is related to the NICE (Natural Interactive Communication for Edutainment) project and is intended to be used mainly in museums as a computer game, with the following two aims: entertaining through an emulated human-human conversation and providing correct information through storytelling. In this work, the authors also suggest a way to evaluate multimodal conversations and present evaluation results from the user test of the first HCA prototype.

[17] A. Corradini, M. Mehta, N.O. Bernsen and M. Charfuelan, *Animating an Interactive Conversational Character for an Educational Game System*, in Proceedings of the 10th International Conference on Intelligent User Interfaces, 2005, Pages 183-190.

A different aspect of the NICE project (Natural Interactive Communication for Edutainment) is described in this work, which focuses on the verbal and non-verbal output information, such as speech, body gestures and facial expressions used to animate Hans Christian Andersen's agent. The authors stress the importance of these features in an educational context, where the realistic portrayal of a human-like agent - with coherent and synchronized output presentation - becomes essential to reinforce users' learning experience.

[18] R. Malaka, K. Schneider, U. Kretschmer, *Stage-Based Augmented Edutainment*, in Proceedings of the 4th International Symposium on Smart Graphics, Banff Centre, Canada, May 2004, Pages 54-65.

After many applications of VR techniques in indoor environments, a new generation of networked edutainment applications is now beginning to use Augmented Reality in outdoor, mobile, location-aware contexts. The main aim of this system is to teach students a history lesson about the 30 Year's War, which took place in the 17th century, and the location of the system is the city of Heidelberg. Walking around this city, the user experiences the ancient environment and learns how people used to live back then, thanks to the large area of the city that is covered by the system. The system includes an IST module.

[19] M. Wiberg, *FolkMusic: A Mobile Peer-to-Peer Entertainment System*, in Proceedings of the 37th Hawaii IEEE International Conference on System Sciences, 2004, Pages 90290b.

The recent widespread use of peer to peer (P2P) architectures is mainly due to Entertainment multimedia applications. Wiberg presents an ongoing project that investigates how people can learn to filter a large amount of information and get to know communities through set theory notions, while walking around a city and entertaining themselves with music. The system, called FolkMusic, is a mobile P2P application designed as an educational "learning by doing" tool to teach children the basic elements of set theory while they are entertaining themselves with music. In order to design this system, the author has explored how interactive audio services can be designed according to the fundamental principles of set theory.

[20] A. Feix, S. Gobel and R. Zumack, *DinoHunter: Platform for Mobile Edutainment Applications in Museums*, in Proceedings of the 2nd International Conference on Technologies for Interactive Digital Storytelling and Entertainment, 2004, Pages 264-269.

Edutainment applications are finally starting to move around, and in this case they are moving inside a natural history museum (Naturmuseum Senckenberg, Frankfurt, Germany). The authors present two different storytelling-based edutainment applications running on mobile devices and designed as interactive learning tools for museum visitors (in particular kids) to learn about the world of dinosaurs. The architecture of the whole system is based on the Ekahau positioning engine to locate users, on a W-LAN for client application transmission and on Open GL streaming data to animate dinosaurs from a rendering server to clients.

[21] A. Lee, K.W. Lai, F.T. Hung, W.L. Leung, K.K. Lam and C.C. Leung, *Synaesthesia: Multimodal Modular Edutainment Platform Development*, in Proceedings of the International Conference on Cyberworlds, 2004, Pages 335-342.

The use of edutainment technologies to support users with disabilities is also investigated in [11]. This paper illustrates a prototype of a multi-user on-line edutainment platform that provides game-based learning modules to improve collaborative, intuitive,

assistive and educational functions. The authors propose this system as a learning aid for people with physical and mental disabilities, such as specific learning disabilities, and to assist patients during rehabilitation.

The paper describes the general architecture of the system, which is based on a client-server model. In particular, the client is developed using Macromedia Flash, thus ruling out users with some disabilities, such as blindness.

[22] J. Florez, I. Garcia, I. Aizpurua, C. Paloc, A. Ugarte, I. Jainaga, J. Colet and X. Zubiaur, *SEITV – Interactive Multimedia Leisure/Educational Services for Digital TV in MHP*, in Proceedings of the International Conference/Workshop on Entertainment Computing, 2004, Pages 248-253.

Television has been widely used for educational purposes, especially for distance education. Now ITV is becoming a new platform to host highly interactive edutainment applications. This paper illustrates the SEITV project, focusing on adapting technological and user differences from PC to TV environments. This project identifies a number of design observations for interactive digital TV that can be applied to the creation of interactive entertainment and educational services. In order to test their methodology, the authors applied it to the

development of a prototype that provides some multimedia edutainment interactive services (i.e. games and quiz games) to motivate people to learn.

[23] S. Skelton, *Edutainment – The integration of Education and Interactive Television*, in Proceeding of the IEEE International Conference on Advanced Learning Technologies , 2001, Pages 478-479.

In this short paper, Skelton presents another way to implement an interactive television solution for edutainment. The author underlines that people prefer entertainment to education on TV, so edutainment can be the successful integration of education into the entertaining environment of television.

ABOUT THE AUTHORS

Paola Salomoni is an Associate Professor of Computer Science at the Department of Computer Science of the University of Bologna, where she teaches in Multimedia Systems and Multimodal Technologies. Her research interests include (but are not limited to) Content Adaptation, Multimodal Technologies and Accessibility, with reference to E-learning applications.

Silvia Mirri is a Ph.D. student in Computer Science at the Department of Computer Science at the University of Bologna. Her research interests include: accessibility and its application, content transcoding and multimedia contents adaptation.

CALL FOR CONTRIBUTIONS

Call for Contributions per Annotated Bibliographies for *The Multimedia Communications Technical Committee E-Letter*

Editor in Chief: Marco Rocchetti
IEEE Communications Society

The E-letter of the Multimedia Communications Technical Committee of the IEEE Communications Society is an electronic publication that welcomes submissions of annotated bibliographies.

A considerable barrier to entry into a new field of research is to become aware of the existing literature on the topic. The Internet and search engines -such as IEEEExplore and, more recently, Google Scholar- have made access conference proceedings and journals immensely easier than it used to be.

However, speed and ease of access, by themselves, do not solve the problem of understanding the state of the art in a given field. Some form of intelligence is needed to filter the raw data represented by the very large number of available publications. Such intelligence may be acquired, in due time, by reading and attending conferences - or it may come from experts already working in the field.

To help fellow engineers and researchers to gain easier access to new fields of activities, the E-Letter of the Multimedia Communications Technical Committee (MMTC) invites multimedia experts to submit annotated bibliographies on topics of their choosing.

It is expected that the annotated bibliographies could be of various kinds - from tutorial level bibliographies on the general field of multimedia communications to bibliographies on very specialized subtopics.

If technically feasible, we will adopt an open approach to bibliographies development. Instruments such as wiki are, in fact, making very easy to build knowledge repositories in a collaborative fashion, as shown, for instance, by the astounding success of wikipedia.org. Initial contributions could, therefore, if the original author agrees, be placed on a MMTC wiki to be integrated by comments and modifications made by the community at large. The E-letter will

periodically publish selected annotated bibliographies.

Possible topics for annotated bibliographies include, but are not limited to:

- Hardware and Software for Multimedia
- Home Networking for Multimedia
- Implemented Prototypes
- Mathematical Modeling and Simulation for Multimedia
- Mobile and Wireless multimedia
- Multimedia Communication Systems
- Multimedia Security
- Multimedia Design
- Multimedia Development Tools
- Multimedia Networking and Quality of Service
- Networked Multimedia Entertainment
- Quantitative and Qualitative Studies for Multimedia
- Streaming Multimedia
- Theoretical/Ergonomic Issues Regarding Multimedia Communications

Annotated bibliographies will be subject to peer review and, upon acceptance, published in an upcoming issue of the E-Letter. All authors should consider the general nature of the E-Letter's readers. Annotated bibliographies should not have been previously published and must not be submitted for publication as well.

Submission guidelines are as follows: length should be no more than 3000 words (four double column pages).

Annotated bibliographies should be submitted in pdf format by e-mail to the E-Letter Assistant Editor J.C. De Martin at demartin@polito.it.

Deadlines:

The next issue of the E-Letter will appear on April 2006. Our deadline for receiving annotated bibliographies articles is 60 days prior to the cover date.

CALL FOR CONTRIBUTIONS

Call for Perspective Articles for

The Multimedia Communications Technical Committee

E-Letter

Editor in Chief: Marco Rocchetti

IEEE Communications Society

Multimedia technology, networks and services are making productive use of important innovations in technical parallel fields: from signal processing and compression to storage and switching devices; from satellite and fiber -based communications to computer graphics and animation; from mobile and wireless systems to information security. A beneficial aspect of this phenomenon is that it is pulling together an extremely diverse group of experts specializing in technical converging areas. Even though such an ever-evolving environment promotes interdisciplinary fusion, however, teachers, researchers and professionals of the discipline need access to the most current information about the concepts, issues, trends and technologies in this emerging field. The **E-Letter** of the **Multimedia Communications Technical Committee** wishes to become a fast medium that provides a comprehensive coverage of the most important definitions, concepts, issues, trends and technologies in the field of multimedia communications technology. To this aim, the **E-Letter** of the Multimedia Communications Technical Committee welcomes submissions of Perspective Articles. Perspectives are articles written from the point of view of an expert in the multimedia technology field. They should focus on a particular technology or technology-related issue and how that technology or technology-related issue is being implemented and is impacting the multimedia arena. The E-Letter is seeking perspective articles on the subject of multimedia as it applies to the broad spectrum of multimedia communications. Also manuscripts for short essays and opinions may be considered.

Possible topics include, but are not limited to:

- Hardware and Software for Multimedia
- Home Networking for Multimedia
- Implemented Prototypes
- Mathematical Modeling and Simulation for Multimedia
- Mobile and Wireless multimedia
- Multimedia Communication Systems

- Multimedia Security
- Multimedia Design
- Multimedia Development Tools
- Multimedia Networking and Quality of Service
- Networked Multimedia Entertainment
- Quantitative and Qualitative Studies for Multimedia
- Streaming Multimedia
- Theoretical/Ergonomic Issues Regarding Multimedia Communications

Selected articles will be peer-reviewed and, upon acceptance, published in an upcoming issue of the E-Letter. All authors should consider the general nature of *E-Letter's* readership. Manuscripts should not have been previously published and must not be submitted for publication elsewhere. The **basic format to follow** is:

- Introduce the technology or issue being discussed.
- Discuss the technology's current or future impact on multimedia communications.
- Discuss pros and cons of the technology/issue.
- Discuss what the author is doing regarding this technology/issue.

Other Guidelines are as follows:

- Length should be no more than 2,000 words (three double-column pages).
- Articles should contain no more than 3 Figures. Figures and tables count for 300 words.
- Articles must contain no more than six references.
- Articles should be submitted in a .pdf format by e-mail to rocchetti@cs.unibo.it.

Deadlines:

The next issue of the E-Letter will appear on April 2006. Perspectives are generally scheduled far in advance. Our deadline for receiving completed articles is 60 days prior to the cover date. We may accept some material later than that, but special arrangements must be made in advance with the Editor.

CALL FOR CONTRIBUTIONS

Call for Columns for

The Multimedia Communications Technical Committee

E-Letter

Editor in Chief: Marco Rocchetti
IEEE Communications Society

The **E-Letter** of the **Multimedia Communications Technical Committee** features columns written by recognized experts in all the technological fields related to multimedia communications. Columns should give to all the multimedia community partners a possibility to voice their views on the issues, challenges, and opportunities facing industry and academia in connection with the field of multimedia communications. Columns featured by the E-Letter of the Multimedia Communications Technical Committee are intended to become a fast medium that provides a comprehensive coverage of the most important issues, concepts, definitions, trends and techniques in the field. To this aim, the E-Letter is looking for a group of insightful and diligent volunteers to serve as regular (or sporadic) columnists on the 2004-2005 term. Columns will be considered on all the aspects of multimedia communications. The E-Letter offers an unparalleled opportunity for potential columnists to express thoughts and opinions to a community-wide audience provided that the following instructions are followed.

What does it mean to be a columnist for the E-Letter?

It means keeping informed about multimedia issues, as well as news and scientific headlines. It means thinking about the issues that matter to readers in the context of the multimedia communications community. It means undertaking substantial research. It means writing clearly and effectively (perhaps provocatively) to demonstrate an opinion piece that can be easily followed.

What is a column for the E-Letter?

Columns are very brief articles in form of opinions, short essays, or news written from the point of view of an expert. Even though a column is, in essence, a timely and relevant piece of opinion writing, each good E-Letter column should relate an opinion to the most relevant topics of the multimedia community. Also controversial issues can make for a great

column, but only if they sound interesting for the multimedia community.

Who can be a columnist for the E-Letter?

Well known experts, skilled practitioners, professionals and researchers are welcome to submit ideas for E-Letter columns. Also contributions from Chairs or members of the various Interest Groups of the Multimedia Communications Technical Committee, as well as from any member of ComSoc, discussing issues related to the activities of their groups, are greatly appreciated. The real and final qualification is having something interesting to say about multimedia communications and its surrounding community, and a willingness to put in the necessary time and effort.

Selected columns will be evaluated by the E-Letter Editor and, upon approval, published in an upcoming issue of the E-Letter. The basic format to follow is:

- Length should be no more than 700 words in length (one double-column page).
- Columns should contain no Figures.
- Columns should contain no References.
- Columns should be submitted as plain text (ASCII) by e-mail to roccetti@cs.unibo.it.

Deadlines:

The issue of the E-Letter will appear on April 2006. Our deadline for receiving columns is 15 days prior to the cover date. We may accept some material later than that, but special arrangements must be made in advance with the Editor.

CALL FOR PAPERS

CALL FOR PAPERS IEEE Journal on Selected Areas in Communications CROSS-LAYER OPTIMIZED WIRELESS MULTIMEDIA COMMUNICATIONS

Recent advances in wireless and mobile communications provide ample opportunities for introducing new services. Supporting multimedia applications and services over wireless networks is challenging due to constraints and heterogeneities such as limited battery power, limited bandwidth, random time-varying fading effect, different protocols and standards, stringent quality of service (QoS) requirements. Cross-layer design methodologies hold great promise for addressing these challenges and providing reliable and high-quality end-to-end performance in wireless multimedia communications.

This issue solicits the state-of-the-art approaches and technical solutions in the area of cross-layer optimized wireless multimedia communications and networking. The issue will provide a compelling forum for researchers and practitioners to present their results. Original contributions, previously unpublished and not currently under review by another journal, are solicited in relevant areas including (but not limited to) the following:

- Architectures for wireless multimedia communications
- Multimedia delivery over various types of wireless networks (3G, 4G, ad hoc networks, WLAN, WMAN, or hybrid networks)
- End-to-end QoS support for wireless networks
- Multimedia delivery to energy-constrained embedded devices
- Caching and content management in WLANs and WMANs
- Interaction among medium access control (MAC), radio link control (RLC), and routing protocols for media delivery over multi-hop wireless networks
- Wireless video sensor networks
- Multimedia delivery for broadband vehicular networks
- Secure multimedia communications
- System prototypes and experiences with broadband wireless multimedia delivery

Please note that submitted papers must explicitly address cross-layer design issues.

Prospective authors should follow the IEEE J-SAC manuscript format described in the Information for Authors. Authors **MUST** submit their manuscripts through the Microsoft Conference Management Toolkit (CMT) at

<https://msrcmt.research.microsoft.com/COWMC2006/CallForPapers.aspx>,

together with a short abstract (approximately 150 words) in the CMT website form. In addition, the mandatory cover page is not included in the page count. The cover page should include paper title, abstract, list of keywords indicating the paper's topic area, authors' full names, affiliations with complete addresses, telephone numbers, and email addresses. Please note potential authors should create their own accounts through the CMT peer review website before submitting manuscript(s). CMT will accept manuscripts in PDF format only. There will be one round of reviewers and acceptance will be limited to those papers requiring only moderate revisions. The following timetable will apply:

Manuscript submission: **MAY 15, 2006**
Acceptance notification: November 1, 2006
Final manuscript due: December 1, 2006
Publication: 2nd Quarter 2007

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CALL FOR PAPERS

CALL FOR PAPERS IEEE International Conference on Multimedia & Expo (ICME 2006)

IEEE International Conference on Multimedia & Expo (ICME) is a major annual international conference organized with the objective of bringing together researchers, developers, and practitioners from academia and industry working in all areas in multimedia. ICME serves as a forum for the dissemination of state-of-the-art research, development, and implementations of multimedia systems, technologies and applications. ICME is co-sponsored by four IEEE societies (the Computer Society, the Signal Processing Society, the Circuits and Systems Society, and the Communications Society).

Authors should submit a four-page manuscript in double-column format including authors' names, affiliations, and a short abstract. Only electronic submission will be accepted. Visit the ICME 2006 website, www.icme2006.org, to submit papers. Topics covered include but are not limited to:

- Audio, image, video processing
- Virtual reality and 3-D imaging
- Signal processing for media integration
- Multimedia Communications and networking
- Multimedia security and content protection
- Multimedia human-machine interface and interaction
- Multimedia databases
- Multimedia computing systems and appliances
- Hardware and software for multimedia systems
- Multimedia standards and related issues
- Multimedia applications

A number of Awards generously sponsored by industry and academic institutions will be presented to the Best Papers/Best Student Papers at the conference. The sponsors include Microsoft Research Redmond, IBM T. J. Watson Center and Ryerson University.

Proposals for Special Sessions and Tutorials are also strongly encouraged. Special Session proposals should be directed to Jiebo Luo at

jiebo.luo@kodak.com
or Andre Zaccarin at
zaccarin@gel.ulaval.ca
by December 1, 2005.

Tutorials are scheduled for July 9, 2006. Brief proposals should be submitted by December 1, 2005, to Anthony Vetro at
avetro@merl.com
or Liang-Gee Chen at
lgchen@video.ee.ntu.edu.tw,
and must include title, outline, contact information for the presenter, and a description of the tutorial and material to be distributed to participants.

Proposals for Exhibitions and Demonstrations should be submitted to Dimitri Androutsos at
dimitri@ee.ryerson.ca
by December 1, 2005.

Important Dates

Special Session Proposal:	Dec. 1, 2005
Tutorial Proposal:	Dec. 1, 2005
Regular Paper Submission:	Dec. 31, 2005
Notification of acceptance:	March 7, 2006
Camera-Ready Paper:	March 31, 2006

CALL FOR PAPERS

CALL FOR PAPERS Multimedia Communications Symposium IEEE Globecom 2006

Symposium Co-chairs

- Prof. S.-H. Gary Chan
Department of Computer Science
The Hong Kong University of Science and
Technology
Email: gchan@cs.ust.hk
- Prof. Pascal Frossard
EPFL (Ecole Polytechnique Fédérale de
Lausanne)
Email: pascal.frossard@epfl.ch

Topics covered

Papers offering novel research contributions in any aspect of Multimedia Communications, Services and Networking are solicited for submission to the Globecom2006 Multimedia Communications Symposium. Papers may present theories, techniques, applications, or practical experiences on topics including but not limited to the following tracks:

Media streaming and real-time delivery

- Techniques and architectures for streaming media and IP telephony
- Joint source and channel coding and error control schemes
- Scalability and transcoding technologies for heterogeneous networks
- Multimedia delivery to wireless embedded devices
- Cross protocol layer design and optimizations

Mobile multimedia communications

- Cross-layer design for multimedia communication
- Medium access control for multimedia over wireless local area network and personal area network
- Mobile content distribution networks
- Mobility management for wireless multimedia
- Software-radio-based techniques for multimedia communication

Quality of service in multimedia communications

- Multimedia QoS support for wired and wireless networks
- MAC protocols with multimedia QoS support in wireless networks

- Transport/streaming protocols for end-to-end QoS support
- Multimedia QoS in peer-to-peer and overlay networks
- VoIP/RTC support in wireless multi-hop networks

Multimedia communications systems and applications

- Online gaming (Service, architecture, protocol, and security)
- Virtual home environment
- Content distribution and web services (including media caching and replication)
- Distributed services middleware and systems for multimedia communications (e.g. Open Service Interfaces)
- Private or peer-to-peer network services for multimedia communications
- Emerging trends, standards, applications, services, and field trials

Home networking and services for multimedia applications

- Home networks protocols (WLAN, WiMax, UWB, ad-hoc, etc.) and architectures
- WAN support of home networks
- Wireless and wireline broadband multimedia access
- V-centric home networks, DTV, and home networked entertainment and games
- Residential gateways, and home networked appliances for multimedia applications
- Novel home networking multimedia applications and enabling technologies
- Test Beds, trials and demonstrations

Questions regarding the theme/scope of the symposium should be directed to the symposium chair or program co-chairs.

Call for Papers

Instructions for Authors: Technical papers should be submitted to the Globecom2006, following the general Globecom submission procedure and instructions.

CALL FOR PAPERS

CALL FOR PAPERS IEEE International Conference on Communications (ICC 2006)

General Information

ICC 2006 will be held in Istanbul, Turkey on 11 - 15 June 2006 under the theme of 'Bridging Continents Through Communications.' The technical program will consist of a general topic symposium, eight specific symposia, Business Applications and Executive Sessions, Tutorials, and Workshops. For the technical sessions, the ICC 2006 program committee is soliciting original papers describing state-of-the-art research and development in all areas of communications and networking. Prospective authors are invited to submit original technical papers for oral or poster presentations at ICC 2006 and publication in the Conference Proceeding. (IEEE Communications Society policy states that all accepted ICC 2006 technical presenters must register at the full or limited rate. For authors presenting multiple papers, one full or limited registration is valid up to three papers.) Proposals for Tutorials and Workshops are also invited. Scope of ICC 2006 includes, but is not limited to, the symposia topics listed below.

General Symposium

The General Symposium at ICC 2006 will include topics that are not covered under the individual symposia listed below. For further details, please contact the General Symposium co-chairs: Raouf Boutaba, (rboutaba@bbr.uwaterloo.ca) and Guenter Schaefer, (g.schaefer@ieee.org).

Specific Symposia

In addition to the General symposium, ICC 2006 will feature eight (8) separate specific symposia as listed below.

- **Wireless Ad Hoc and Sensor Networks**
- **Next Generation Mobile Networks**
- **Wireless Communications**
- **Communication Theory**
- **Optical Systems and Networks**
- **Network Security and Information Assurance**
- **Signal Processing for Communications**

- **Communications QoS, Reliability and Performance Modeling**

Business Applications and Executive Sessions

Proposals are invited for panel sessions on the latest technical and business issues in communication and networking topics. Proposals must be submitted to the Chair: Cengiz Evci, (cengiz.evci@alcatel.fr).

Tutorials and Workshops

Sunday, 11 June 2006

- The Network of Excellence in Wireless Communication (Newcom) Workshop
Organizer: Andreas Polydoros
polydoros@phys.uoa.gr
- Multimedia Communications Workshop: State of the Art and Future Directions
Organizer: Juan Carlos De Martin
demartin@polito.it

Thursday, 15 June 2006

- WINNER Workshop: Future radio systems for mobile and wireless communications
Organizer: Werner Moehr
werner-mohr@siemens.com
- IP over Digital Video Broadcasting Networks Workshop
Organizer: Charalabos Skianis
skianis@iit.demokritos.gr