SEMINAR

TITLE: **Multimedia Over the Internet**

DURATION: Half day (can be extended to full-day)

INSTRUCTOR: Borko Furht, Professor and
Director of NSF Multimedia Laboratory
Department of Computer Science and Engineering
Florida Atlantic University, Boca Raton, Florida 33431
Tel: (561) 297-3486   Fax,: (561) 297-2800
Email: borko@cse.fau.edu

OBJECTIVE:

Multimedia coupled with information superhighways allows revolutionary new ways to provide a variety of services such as video-on-demand, interactive TV, access to digital libraries, distance training, collaborative work, videoconferencing, and many others. The multimedia and information superhighway technologies including World Wide Web, have already created many benefits, but we can still only guess at many benefits these liberating new technologies will create in the future. Multimedia, Internet, and Web are changing our lives!

The goal of this tutorial is to link present realities to the future of technology. It should bring to participants 21st century thinking today. The first part of the tutorial is on present and future multimedia and information superhighways technologies. The fundamental technical concepts and principles of multimedia, Internet, and Web are presented. Special emphasis is given to the enabling techniques that allow video over IP.

The synergy between the Internet and multimedia promises to bring a tremendous explosion in application possibilities. The second part is on present and future interactive multimedia applications on information superhighways. The tutorial concludes with our vision of the 21st century. We present our views of future computers and the global community in which billions of people communicate, interact among themselves, and receive various services via information superhighways. We also envision how "the information home" and "the company of the future" will look like.

TARGET AUDIENCE:

This tutorial is intended for system designers, engineers, and scientists, and programmers who are involved in Internet applications and multimedia systems. It is also intended to anyone interested in receiving an advanced technical training in this field. The tutorial assumes some familiarity with multimedia and Internet. Level: intermediate.

TUTORIAL OUTLINE:

1. MULTIMEDIA TECHNOLOGIES
   - Audio, sound, image, animation, and full-motion video
   - Multimedia devices and systems
   - Multimedia compression
   - Multimedia servers
   - Introduction to video and image databases

2. INFORMATION SUPERHIGHWAYS AND WORLD WIDE WEB
   - Fundamentals of Internet
   - Intranet and its operation
   - World Wide Web
   - Web tools and languages: HTML, Java, and VRML
   - Future information superhighways

3. VIDEO OVER IP
   - Challenges and obstacles
   - Technologies to support video services on the Internet
     (Real-time file systems, Video compression, Media streaming protocols, Explicit QOS control), Video databases)
   - Two primary architectures: (a) download and play, (b) streaming
   - Content management

4. INTERACTIVE MULTIMEDIA APPLICATIONS - TODAY
   - Video-on-demand
   - Collaborative work and videoconferencing
   - Internet radio and TV broadcasting
   - Digital libraries
   - Interactive television systems
   - Distance learning

5. INTERACTIVE MULTIMEDIA APPLICATIONS IN 21ST CENTURY
   - Participatory publishing
   - Integration of the Web with traditional broadcast media
   - Webspace in three dimensions
   - Universal messaging systems
   - Web multimedia search services
   - Web translation services

6. VISION OF THE 21ST CENTURY
   - Computers for 21st century: WebTV, PC-TV, Network and wireless computers
   - Global community
   - Information home
   - Virtual multimedia company

TUTORIAL MATERIAL:
Class notes including copies of all slides.

Short Curriculum Vitae

Borko Furht is a professor of computer science and engineering at Florida Atlantic University (FAU) in Boca Raton, Florida. He is the founder and director of the Multimedia Laboratory at FAU, funded by National Science Foundation. Before joining FAU, he was a vice president of research and a senior director of development at Modcomp, a computer company of Daimler Benz, Germany, and a professor at University of Miami in Coral Gables, Florida.

His current research is in multimedia systems and Internet, video compression, video indexing and retrieval, and interactive TV systems. He has published over 200 papers, 23 books, and holds 2 patents. Dr. Furht received research grants from national agencies such as NSF and NASA, and from industrial corporations such as IBM, General Electric, Xerox, Datacom, and Modcomp.

Dr. Furht is a founder and editor-in-chief of the *Journal of Multimedia Tools and Applications* (Kluwer Academic Publishers). He recently completed three handbooks, to be published by the CRC Press, "*Handbook of Internet Computing*" (2000) "*Handbook of Multimedia Computing*", (1999) and *"Handbook of Internet and Multimedia Systems and Applications"* (1999). He was the Program Chairman for America for the IEEE Conference on Multimedia Systems and Computing '99 in Florence, Italy and area chairman for the IEEE Conference on Multimedia and Expo to be held in Tokyo in August 2001. He is also consulting editor for the Book Series on *Multimedia Systems and Applications (Kluwer)* and *Internet and Communications* (CRC Press).

Dr. Furht has initiated the graduate program on multimedia and Internet at FAU, and has presented tutorials, seminars, invited lectures, and keynote addresses at various IEEE and ACM conferences. He has received several technical and publishing awards, and has consulted for IBM, Hewlett-Packard, Xerox, General Electric, JPL, NASA, Honeywell, and RCA